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ABSTRACT

Data from the National Longitudinal Transition Study of Special Education Students were used to examine five key aspects of secondary education: (1) the overall high school experience, (2) academic course-taking, (3) vocational preparation, (4) placement, and (5) support services for students. An executive summary reports major findings in these areas as well as information on grade-level variations in secondary school programs, differences in school programs for students in different disability categories, and differences in the educational programs of students with disabilities from families with poverty-level incomes and students from families with higher incomes. Almost 70 tables and over 30 figures present the findings of the report's seven chapters, which have the following titles and authors: "Secondary Schools: The Times They Are a Changin'" (Kathleen Hebbeler); "Measurement and Analysis Considerations" (Mary Wagner et al.); "Overview of the High School Experiences of Students with Disabilities" (Kathleen Hebbeler); "Academic Course-Taking" (Lynn Newman); "Participation in Vocational Education by Students with Disabilities" (Jose Blackorby); "Support Services Provided by Secondary Schools" (Renee Cameto); and "What Have We Learned about the Secondary School Programs of Students with Disabilities?" (Mary Wagner). (Individual papers include references.) (DB)

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THE SECONDARY SCHOOL PROGRAMS OF STUDENTS WITH DISABILITIES

ED 365 084

A Report from the National Longitudinal Transition Study of Special Education Students

December 1993

Prepared for:

The Office of Special Education Programs
U.S. Department of Education

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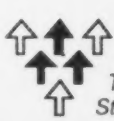

National Longitudinal Transition Study

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Prepared for:

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U.S. Department of Education

Edited by:

Mary Wagner

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THE SECONDARY SCHOOL PROGRAMS OF STUDENTS WITH DISABILITIES

Executive Summary

In the 1980s, amid the calls for reform from both the general and special education communities, the first generation of students with disabilities to be entirely educated under the provisions of the Education for All Handicapped Children Act (P.L. 94-142) reached high school. Their experiences can provide much-needed information about what secondary school students with disabilities experience in their high school years. This report considers several key topic areas involving secondary school programs for students with disabilities to help inform the debate regarding future changes in education policy and programs:

- The overall high school experience
- Academic course-taking
- Vocational preparation
- Placement
- Support services for students.

To address these topics, we use data from the National Longitudinal Transition Study of Special Education Students (NLTS), which was mandated by the U.S. Congress in 1983 in response to growing concerns about the outcomes of young people with disabilities. The NLTS includes a nationally representative sample of more than 8,000 students who were ages 15 to 23 and in secondary special education in 1985. Data for these students were collected in 1987 and in 1990; additional data were collected on a subsample of students in 1989. School records were supplemented by data collected through parent interviews and surveys of teachers and school administrators.

Major findings regarding each topic are summarized below. Then we take several cross-cutting perspectives, synthesizing the findings, along with information from other NLTS analyses, first as they describe the changing experiences of students moving from 9th through 12th grades and as they differ from those of peers in the extended 12th grade and those who were not assigned to grade levels at all. A second perspective summarizes the experiences of students with different disability classifications. We then consider patterns of secondary school programs for students who differ in gender and socioeconomic status.

The Overall High School Experience

- Several features of secondary school were similar for students with disabilities and students without disabilities. Most students with disabilities (92%) attended regular high schools, where they generally were assigned to grade levels and received transcripts as a record of their coursework.

- There are several indications that students with disabilities may have had to work a bit harder to graduate. Nearly one-fourth of graduates with disabilities had supplemented the standard eight-semester program with an extra semester or summer school attendance. Graduates with disabilities were older, on average, than the typical age for graduation (19 years), suggesting that many had attended an extra year of school in their educational careers. They earned an average of 22.3 credits, roughly the same number as their nondisabled peers, although more of them were in vocational courses.
- Dropouts with disabilities also spent a lot of time in school, although they ended up with few credits to show for it. They dropped out, on average, at the age when most students graduated (18.4 years), but they had earned fewer than half the credits needed for graduation (9.5 credits). Dropouts had a similar percentage of academic credits as graduates (53%) but a smaller percentage of vocational credits (18%) because they left school before reaching the upper grades, where vocational courses were more common. Fewer than 5% of students with disabilities who dropped out of secondary school ever returned to earn a diploma, either at their secondary school or through a GED.

Academic Course-Taking* .

- Academic classes were central to the high school experiences of most students with disabilities; virtually all took at last one academic course each year in high school.
- Students with disabilities who completed four grades of high school generally met the typical state requirements for high school graduation of 11 or 12 credits in English, social studies, mathematics, and science, but had fewer academic credits than their nondisabled peers, who accumulated 15 academic credits by the end of 12th grade.
- Especially during the early grades, students were usually enrolled in a core group of courses, including English, math, social studies, and science. Very few students with disabilities enrolled in courses often described as "college prep," such as foreign language or advanced mathematics. Students who earned the most credits in these courses were those more likely to continue on to postsecondary school.
- Students with disabilities earned fewer academic credits each subsequent year in high school than the preceding year, regardless of disability category or demographic characteristics. Although English enrollment remained consistently high across high school grades (at least 90% of students in each high school grade took at least one English course), the percentage enrolled in mathematics steadily decreased over the 4 years of high school, so that fewer than half were enrolled in a mathematics class by 12th grade.
- Although students with disabilities spent more than half of their school time in academic courses, when the NLTS asked teachers to report on the primary goal of transition planning for 12th-grade students with disabilities, competitive employment was the most frequently reported goal, followed by attending a postsecondary vocational training program.

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* Within the NLTS, academic courses include coursework in English, social studies, mathematics, science, and foreign language, as well as the courses that support these academic classes, such as study skills courses.

Vocational Preparation

- Virtually all students with disabilities were exposed to vocational instruction during high school. More than half (58%) of students with disabilities began their experience with vocational education as freshmen. This number increased with each successive year of secondary school, so that by 12th grade, 83% of students were taking an occupationally relevant vocational education class.
- Many more students participated in occupational vocational education (training linked to specific vocational skills) than in prevocational education (course content focused on job readiness skills). Students with disabilities earned six times as many credits in occupational vocational education (4.5) as in prevocational education (.7).
- Within the seven content areas of occupational vocational education, more students with disabilities took classes and earned more credits in technical education (63%, 1 credit), trade and industry (59%, 1.9 credits), and office occupations (58%, .8 credit) than they did in home economics (28%, .5 credit), agriculture (18%, .4 credit), marketing (10%, .2 credit), or health occupations (2%, .1 credit).
- Cumulatively, 35% of students with disabilities took a concentration of vocational courses during their high school careers (four or more classes in a single content area). This proportion ranged from 40% of students with learning disabilities to 16% of students with multiple handicaps. The largest proportion of students concentrated in trade and industry (66%), followed by office occupations (22%).

Placement

- At the secondary school level, inclusion in regular education was a reality for the majority of students with disabilities. Within regular high schools, students with disabilities averaged 70% of their time in regular education classes; the remaining 30% of classroom time was spent in special education settings. Only 3% of students with disabilities spent all of their time in special education classes; 21% were fully included in regular education classes for all of their coursework. Clearly, for most students, the question is not whether students are included or should be included in regular education, but for what are they included, who is included, and what experiences do they have when they are included in regular education.
- High school students with disabilities received most of their academic instruction in regular education classes. Each year in high school, these students earned more of their academic credits in regular education courses than in special education courses. This was true across all years of school and academic-content courses. The majority of students with disabilities also received vocational education in regular education settings. Over the 4 years of high school, 92% received instruction in occupational vocational education in regular education classes; only 21% had any such instruction in special education.
- When students with disabilities were mainstreamed into regular education classes in secondary school, they shared the attention of a single teacher with, on average, 22 other students, 2 of whom also had disabilities. In contrast, their special education classes contained 9 students, a teacher, and a part-time aide, on average.

- Teachers expected most of the students with disabilities who were placed in regular classes to keep up with other students in their class. However, regular education teachers acknowledged that the majority of these students (82%) needed accommodations in their academic classes. A wide variety of accommodations were reported to be provided to students in regular education classes, possibly reflecting the individualized approach that is often necessary and appropriate when teaching students with disabilities.
- More than 85% of mainstreamed students had regular education academic teachers who reported the need for assistance when a student with disabilities was enrolled in their class. The most frequently reported type of assistance available to these teachers was consultation services from special education staff, with almost 80% reporting the availability of this type of help.
- Despite the accommodations and supports provided for teachers and students, regular education is a difficult environment in which to succeed. Other NLTS analyses (Wagner, 1991a) have demonstrated that, controlling for differences in students and other aspects of their programs, students with disabilities who spent more time in regular education classes were more likely than other students to fail courses, and that failing courses is a powerful predictor of early school leaving. Continuing NLTS analyses are focused on identifying factors that will help students succeed in regular education classrooms.

Support Services Provided by Secondary Schools*

- The majority of students with disabilities received support services during secondary school, with increasing numbers of students receiving services as they progressed through the grades. Transition planning was provided most often, increasing from about one-quarter of students having a transition plan by 10th grade to nearly 80% having a plan by 12th grade. Life skills training was the next most likely service to be provided to students with disabilities. Receipt of this service increased from 25% to 43% from 9th through 12th grades.
- Services such as physical therapy, personal counseling, speech therapy, and reader and interpreter services address the needs of students with low-incidence disabilities. Fewer than 20% of students with disabilities received any of these services, with one notable exception. Tutoring (included with reader and interpreter services) increased dramatically, doubling between the 11th and 12th grades. Schools may have provided tutoring for students to help them complete the classes needed for graduation.
- Speech therapy and interpreter services were provided most commonly for students with hearing impairments. Personal counseling, physical therapy, and life skills training were provided most often to students with multiple handicaps or mental retardation. As would be expected, support services that addressed the needs of a particular disability group were provided more often to that category of student. Students with serious emotional disturbances were most frequently provided personal counseling, students with orthopedic impairments were most frequently provided physical therapy, and

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* The NLTS has investigated provision by schools of help from a tutor, reader, or interpreter; personal counseling or therapy; occupational therapy or life skills training; speech therapy; physical therapy or mobility training; and transition planning.

students with visual impairments were provided reader services most often. Yet fewer than half of students in these categories received these services in a given year. Overall, students with learning disabilities, visual impairments, and speech impairments were the least likely to receive support services.

- Students with most of their classes in special education settings, in general, were more likely to receive support services than were students with the majority of their classes in regular education. The two exceptions to this pattern were that students with more regular education classes tended to get more tutoring and life skills training in the later grades. It is likely that the increase in tutoring for students with more classes in regular education reflects the push to help students in special education to complete the necessary requirements for graduation. The increase in life skills training may reflect the need for these students to earn sufficient credits for graduation that were not highly demanding academically, or the opportunity to take an elective if they had completed their required academic classes in previous years. It is likely that life skills also were viewed as important for transition to adult life.

Grade-Level Variations in Secondary School Programs

The Early Years

The school programs of students with disabilities in the 9th and 10th grades as a group were strenuous. In these years, students' schedules were dominated by academic course requirements, which filled four of the typical six courses in a school day. Vocational education also was prominent; by the end of 10th grade, only 11% of students with disabilities had not taken any vocational education. The majority of students took their courses in regular education settings, averaging 68% of their school day in regular education classes. Training in life skills was not common for secondary school students with disabilities in the early grades. Students at these grade levels were marginally less likely than upper-grade students to have received a variety of support services from their schools.

With the heavy academic focus, the predominance of regular education placements, and the relatively lower level of support services provided, it is not surprising that 9th- and 10th-grade students were more likely to receive failing grades in their courses than were students in the upper grades. By failing classes, students did not earn the credits needed for graduation and began to fall behind their peers in progress toward graduation. Some of these students were lost to the educational system in the process.

The Later Years

By 11th grade, 20%* of students with disabilities were no longer in secondary school. However, if students did persist in school through the challenges of 9th and 10th grades, they

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* This figure includes 12% of students who dropped out in 9th and 10th grades and 8% of students who dropped out earlier (Wagner, 1991a).

encountered greater flexibility in scheduling. The rate at which students with disabilities were enrolled in academic classes declined markedly at the upper grade levels—a change that may have reduced the challenges to their academic achievement. At the same time, students with disabilities were not taking the credits often required for further education after high school, perhaps shutting off that avenue for upgrading skills and abilities as young adults.

Vocational courses became more prominent for upper-grade students, with about 8 of 10 students with disabilities in the upper grades being enrolled in occupational vocational education, earning approximately 1.5 credits per year. The shift to vocational education classes from academic classes may have improved the academic performance of older students; the rate of course failure was markedly lower for seniors than for students at any previous grade level* (Wagner, Blackorby, and Hebbeler, 1993). Life skills training also became somewhat more common for students in the upper grades, with about 4 in 10 students receiving this kind of instruction. Other support services also were provided somewhat more often. About half of 11th- and 12th-graders had transition plans to facilitate their movement from secondary school to adult roles.

Students in the Extended 12th Grade

A small minority of students with disabilities who had progressed through the grade levels of secondary school continued in school past a single 12th-grade year, in many cases despite having earned the credits required to graduate. This extended 12th-grade year continued the high level of involvement in vocational education that was noted for 12th-graders; about three-fourths of students were enrolled in occupational vocational education and a similar percentage were enrolled in prevocational courses, earning a total of 2.8 vocational credits that year. Academics, too, were part of the extended 12th-grade curriculum, although students were enrolled in academic classes less intensively, earning 1.6 credits. All students received at least one of the support services investigated by the NLTS. Perhaps these services were the incentive to remain in school longer, or they were the services felt to be needed for students to accumulate the credits necessary to graduate or to make a successful transition out of school.

Students Not Assigned to Grade Levels

Overall, 5% of students with disabilities who attended regular secondary schools were not assigned to grade levels, but were in ungraded special education programs. Compared with students at grade levels, these students were disproportionately classified as multiply handicapped or mentally retarded or had other disabilities usually considered more severe. The school programs of students not assigned to grade levels were significantly less likely to

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* Readers should be reminded also that failing students were those most likely to have dropped out of school, leaving a population of more academically capable students in the upper grades.

involve academic instruction than the programs of other students, although two-thirds of students did receive special education academic instruction. Students not at grade levels also were much less likely than their peers to be receiving occupational vocational education, raising questions regarding how well prepared these students could be to enter the work force after secondary school. In contrast, students not at grade levels were more likely than others to be receiving instruction in prevocational or job readiness skills. Support services also were common for students not assigned to grade levels; 84% received some support service, including 61% who received life skills training. Transition planning also was a feature of the programs of these students; 87% had transition plans, with those plans being more likely to be written and to have begun sooner than plans of students in 12th grade.

Differences in School Programs for Students in Different Disability Categories

Students with Learning Disabilities

Virtually all secondary-school-age students with learning disabilities attended regular secondary schools and had programs that proceeded from grade level to grade level, as did typical students without identified disabilities. Graduates completed school in just over 8 semesters and earned 22 credits, also similar to typical students. They were less likely than many other categories of students with disabilities to supplement their school-year programs with summer school or extra semesters of study.

Students classified as learning disabled earned more credits in vocational courses than almost any other students, with the majority of credits in occupationally specific courses. They also were more likely than any other group of students to have had concentrated instruction in a vocational content area; the majority of students concentrated in courses in trade and industry, reflecting in part the predominance of males in this disability category. One in eight students with learning disabilities had participated in work experience programs as part of their vocational education.

The emphasis on vocational rather than academic courses reflects the transition goals of students with learning disabilities, which emphasized competitive employment (59%) over college (28%). It also reflects the reality of their postschool paths. The majority had competitive jobs (57%), and they were more successful than most groups of students with disabilities in keeping jobs after high school and in achieving wage gains over time (D'Amico and Blackorby, 1992).

Yet, we cannot dismiss concerns about the academic side of their programs. Students with learning disabilities earned almost 12 of their 22 credits in academic courses, but these classes rarely were at the college preparatory level. On average, the students spent three-fourths of their class time in regular education classes, in which 95% of them were expected to keep up; fewer students actually did so (87%). Few students classified as learning disabled received tutoring services from their schools, particularly in the early high school years. Many

had failed at least one course in their most recent school year, the failure rate being much higher in regular than in special education classes (33% vs. 12%; Wagner, 1991a). Students with learning disabilities had one of the highest dropout rates of any students with disabilities (30%). Once they dropped out, very few returned to school or completed their secondary educations by earning a GED (Marder, 1992).

The academic difficulties of students with learning disabilities in secondary school may be part of the explanation for their avoidance of postsecondary education. Few students with learning disabilities (18%) had attended 2-year or 4-year colleges when they had been out of high school 3 to 5 years (Marder, 1992). Without continued growth in job skills, competing for jobs after high school is likely to become increasingly difficult for these young people, despite their vocational training in secondary school.

Students with Speech Impairments

There were several similarities in the secondary school experiences of youth with speech impairments and youth in the general population. Students with speech impairments were significantly more likely than other students with disabilities to be declassified from special education in secondary school; 19% had been declassified in a single year (Wagner, 1991c). It is not surprising, then, that students with speech impairments were more likely than any other category of student to be fully included in regular education classes. Almost two-thirds of students classified in 1985 as speech impaired spent all of their class time in regular education classrooms in grades 9 through 12 (classes most likely to qualify toward postsecondary education requirements).

Among 12th-graders, 36% of students with speech impairments who had transition plans had college enrollment as a transition goal; 39% of students who had been out of secondary school 3 to 5 years met that goal. In preparation for postsecondary education, students with speech impairments were significantly more likely to have taken advanced mathematics (36% vs. 11%) and foreign language (44% vs. 17%) than students with many other kinds of disabilities. These course-taking choices and other secondary school experiences laid a solid groundwork for a successful transition out of school. Earlier NLTS analyses showed that young people with speech impairments were among the "success stories" when looking at postschool outcomes (Wagner, 1992, p. 8-1). For example, young people with speech impairments experienced greater gains in competitive employment in the early years after secondary school than youth in any other disability category (D'Amico and Blackorby, 1992). Their dropout rate was no higher than that of students in the general population (about 25% of exiters), and almost half had attended some kind of postsecondary school when they had been out of secondary school 3 to 5 years.

Students with Emotional Disturbances

The majority of students who were classified as seriously emotionally disturbed attended regular high schools (88%), where their programs were largely similar to those of typical students. Virtually all were assigned to grade-level programs. Their programs were less likely than those of students with learning disabilities, for example, to emphasize vocational education. On average, they spent three-fourths of their class time in regular education classes; almost one-third of students with emotional disturbances were fully mainstreamed. Regular education academic teachers of 12th-graders in this category reported that all were expected to keep up with other students.

Teachers of 70% of 12th-graders with serious emotional disabilities reported that these students needed some accommodations to succeed in regular education, but the accommodations provided were almost entirely academic in orientation. Yet the disability for which these students were classified as needing special education was emotional in nature, and their difficulties in school were as much social as academic. However, fewer than one-third had been provided personal counseling or therapy by their schools to help in coping with their disability. Only 11% of 12th-graders were reported to have behavior modification programs in place in their regular education classes. Can we expect that giving more time to take tests or applying modified grading standards will effectively help a student whose disability may manifest itself most in conduct disorders or social adjustment problems? NLTS data suggest that few aspects of students' school programs were directed explicitly to the central nature of their disability.

Students with Mental Retardation or Multiple Impairments

Students classified as having mental retardation or multiple impairments had school programs that were similar to each other in many ways and that differed markedly from those of most other students with disabilities.* Among students with mental retardation, 83% attended regular secondary schools; fewer students with multiple impairments did so (59%). They were the least likely students in regular schools to be assigned to grade-level programs or to approximate year-round learning programs by attending summer school. They were more likely than any other students in regular schools to leave school by reaching the maximum age limit for attendance (5% and 14%).

In the academic realm, students with mental retardation or multiple impairments who earned credits earned about as many as students with disabilities as a whole, showing a typical degree of emphasis on academic instruction for students with disabilities (about 11

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* The similarities of the two groups are not surprising in that more than half of students classified as multiply handicapped have mental retardation as one of their disabilities (Marder and Cox, 1991). Hence, they might have educational needs similar to those of students with mental retardation alone, with the added requirements of their other disability or disabilities.

academic credits over 4 grade levels). However, students in these two categories spent the smallest proportion of their class time in regular education (44% and 32%, respectively); 8% of students with mental retardation and 24% of students with multiple handicaps spent no class time in regular education settings. Within their regular education classes, students with mental retardation were less likely than others with disabilities to be expected to keep up with other students, yet they were the only category of students for which teachers reported that a higher percentage kept up in class than were expected to do so.

The placement of students with mental retardation or multiple impairments in the vocational realm also differed from those of other students with disabilities. Although virtually all had been enrolled in occupational vocational courses and they were more likely than many other categories of students to be enrolled in prevocational education courses, they again were much more likely to take them in special education settings than were other students with disabilities. The programs of students with mental retardation or multiple impairments also were more likely than those of students with many other kinds of disabilities to include life skills training, reflecting the emphasis in their transition goals on achieving maximum personal independence (50% of students with transition plans had this goal).

In their early postschool years, many students with mental retardation did achieve independence in some arenas. As a group, they were as socially active as any other group of young people with disabilities, and they achieved significant gains over time in their employment status and in the rate at which they lived independently. Yet, even with substantial gains, youth with mental retardation or multiple impairments were "the exception to the rule of increasing independence" after high school for young people with disabilities (Wagner, 1992, p. 8-3). These outcomes raise the question of whether secondary school experiences are providing the solid foundation for independence needed by students with these disabilities.

Students with Visual Impairments

Students with visual impairments earned more academic credits (14.7) than any other group of youth with disabilities and were significantly more likely than other students to enroll in college preparatory classes, including advanced math (57%) and foreign language (62%). They also were more likely than most students to supplement their school-year programs by taking summer school (31% vs. 16% overall). Although they earned fewer vocational credits than most other students with disabilities, when they did enroll in occupational courses, they were more likely than others to take courses in technical fields. They had the highest grade point average of any group of students and among the lowest dropout rates (Wagner, Blackorby, and Hebbeler, 1993).

With this strong academic base, many young people with visual impairments went on to pursue their college aspirations. Youth with visual impairments were more likely than any other category of youth to go to 2-year or 4-year colleges after high school; 61% did so, a rate

virtually the same as that of youth in the general population (Marder, 1992). Although they did not experience early success in the job market (D'Amico and Blackorby, 1992), the solid academic groundwork of their secondary school programs and the long-term benefits of postsecondary education suggest more promising outcomes for these young people than for many with disabilities.

Students with Hearing Impairments

Although students with hearing impairments often are considered as a single group, the NLTS demonstrates that students classified as hard of hearing and those classified as deaf have markedly different secondary school programs to reflect their varying levels of hearing disability. A basic difference in their school experiences is the extent to which students attended regular secondary schools. Among students classified as hard of hearing, 91% attended regular secondary schools, but only 37% of students classified as deaf did so, the lowest enrollment rate in regular secondary schools of any category of students with disabilities.

Within regular secondary schools, the programs of hard of hearing and deaf students had both similarities and differences. Most students in both categories were assigned to grade-level programs, completed school in just over 8 semesters, and earned 13.5 academic credits out of 22 total credits. Virtually all students in both categories had enrolled in occupational vocational courses, earning 3.7 credits in those courses. However, students who were hard of hearing spent considerably more of their time in regular education classes (75%) than did students classified as deaf (57%). Whereas a third of hard of hearing students spent all of their class time in regular education classes, only 10% of deaf students were fully included. Deaf students also were more likely to receive a variety of support services from their schools than were students classified as hard of hearing.

The school experiences of those with hearing impairments also differed in important ways from those of students with other disabilities. Their goals after high school were more likely than other students' to include college attendance, and they were more likely than most categories of students to graduate from high school as a first step toward their goal of postsecondary education. Three to 5 years after leaving secondary school, 60% of students with hearing impairments had attended postsecondary school, a rate approaching that for students in the general population (Marder, 1992). Their transition planning also was more likely than many other students' to involve contacts with or participation by staff from the Vocational Rehabilitation agency, a common adult service provider for students with hearing impairments and an agency that frequently supports postsecondary school attendance for its clients (Wine, Hayward, and Wagner, 1993).

Students with Physical Impairments

Students with orthopedic or other health impairments span a broad range of functional abilities that have quite different implications for educational programs. Given this diversity, it is not surprising that there is no particular "central tendency" to the secondary school programs of students classified as orthopedically or other health impaired. As a group, we rarely find them to have been at either extreme of the distribution along any dimension of programs we have examined; rather, the mixture of programs combined within these groups places them generally in the middle range of regular education placement, credits earned, and other aspects of programs we have investigated. The majority attended regular secondary schools, where they spent about 70% of their class time in regular classrooms. Their programs were a fairly typical mix of academic and vocational courses. One exception to the middle ground of their programs is that students with health impairments were more likely than any other students to take summer school, perhaps to compensate for their high absenteeism due to illness or treatment. Not surprisingly, students with physical impairments also were more likely to receive physical therapy, mobility training, or general help with physical needs than were students in most other disability categories.

In their postschool years, we also find youth with physical disabilities to be in the midrange of the distribution of those with disabilities, neither being as independent as youth with learning disabilities, for example, nor demonstrating the generally poor outcomes of those with multiple handicaps.

Gender Differences in School Programs

In the academic arena, common gender differences that are observed in the general population of students, such as the tendency for female students to take somewhat less math and science than male peers, are not apparent among students with disabilities. The only significant gender difference in academic course-taking is the higher rate of foreign-language enrollment among females. However, sizable and traditional gender differences are noted in vocational course-taking. Female students were not as likely as males to enroll in vocational courses early in their high school careers. Thus, females who dropped out of secondary school early were less likely than males to have had vocational training before leaving school. Young women also did not take as many vocational courses when they did enroll in them. This pattern is mirrored in the percentages of students who took four or more semesters in a single content area; 40% of males were concentrators in vocational areas by the end of 12th grade, compared with 23% of females. The content areas of vocational instruction also differed, with females emphasizing the traditional areas of home economics and office occupations and men concentrating in trade and industry. Not so traditionally, women were three times as likely as men to enroll in technical vocational courses.

Perhaps reflecting the relatively greater severity of disability among females than males (Wagner, 1992), female students were more likely than male peers to receive one or more of a

variety of support services investigated by the NLTS. The greatest disparity was in the extent to which females received life skills training (including home economics classes), although they also received counseling and help from a tutor, reader, or interpreter in some grade levels at a higher rate than male students.

The emphasis on home economics and life skills instruction among young women may be an artifact of tradition or may reflect their postschool goals. Female 12th-graders with disabilities were much less likely than males to have competitive employment as their postschool goal. Despite higher academic performance while in school, young women with disabilities were just as likely as young men to drop out of school, but almost 1 in 4 young women with disabilities dropped out of school because of pregnancy or childrearing, a reason cited for only 1% of young men. By 3 to 5 years after high school, 30% of young women with disabilities were married and 41% were mothers, a rate that was significantly higher than the reported parenting rate for young men with disabilities (16%) or for young women of the same age in the general population (26%). The school programs chosen by or provided to many young women with disabilities support a postschool path involving home and child care more actively than postsecondary education or employment.

The Haves and Have Nots

Students with disabilities who came from families with poverty-level incomes had markedly different educational programs than students whose families had higher incomes, perhaps reflecting the reality that resource-poor students often attend resource-poor schools. A similar pattern is apparent when white youth are compared with minority students with disabilities. Academically, students with disabilities from poorer households earned fewer academic credits in 4 years than students from households with higher incomes. They also were less likely to have enrolled in courses, such as advanced mathematics, that are considered part of the path to postsecondary education. Minority students also earned fewer credits in occupational vocational education than nonminorities.

Poorer students and minorities were less likely than more affluent and white students to be enrolled in regular education classes. This finding points out the important role of poverty in aggravating the educational deficits of young people with disabilities. The regular education classes in poor schools may be particularly inhospitable environments for students with disabilities because of the other challenges posed to teaching staff by high concentrations of students with limited English proficiency, troubled family lives, and economic disadvantage, regardless of disability. In economically strapped schools, special education classrooms may be one of the few options available for addressing the dual needs of students with disabilities who live in poverty.

Although poor students were spending more time in special education, the support services often considered part of special education were less likely to be provided to them. Thus, poor students with disabilities apparently experienced the social and economic costs of special

education placements, without the benefit of support services that generally accrue to students spending more time in special education classes, such as tutoring, counseling, or life skills training.

Postschool outcomes, too, showed the disadvantages of poverty. Lower employment rates, lower levels of social integration (registration to vote, group memberships), and higher arrest rates characterized the postschool experiences of youth from low-income households relative to other youth with disabilities (Wagner, 1992). Clearly, disability is only one of the obstacles to independence faced by youth with disabilities from poor households.

In addition to providing the most complete description of secondary school programs of students with disabilities that has been available to date, *The Secondary School Programs of Students with Disabilities* lays the groundwork for future NLTS work, which will relate the variations in school programs described here to aspects of students' performance while they were in secondary school and in the early postschool years.

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1 SECONDARY SCHOOLS: THE TIMES THEY ARE A CHANGIN'

by Kathleen Hebbeler

> What do Americans want high school to accomplish?
> Quite simply, we want it all.
>
> (Boyer, 1983, p. 57)

The American public indeed has high expectations for its secondary schools, accompanied in recent years by a pervasive sense of dissatisfaction with them. In the 1980s, numerous task forces, commissions, and professionals in education put high school under the microscope and were not pleased with what they found. A consensus emerged that American secondary schools were not producing the kind of graduates the country would need for the twenty-first century. Educational reform was called for, including higher performance standards for students and teachers, longer school days and years, and more stringent graduation requirements.

At the same time, groups within the special education community were advocating for a variety of reforms aimed at improving the education of students with disabilities. Some members of the community were engaged in a highly charged debate over the relationship between regular and special education. Others looked at the troubling findings on the postschool outcomes for students with disabilities and called for individualized transition planning and services. Neither of these calls for change is based on a consensus as to the general goals of special education in secondary school or solid information about the relationship between what schools do and the outcomes achieved by their graduates.

Amid the calls for reform from both the general and special education communities, the first generation of students with disabilities to be educated entirely under the provisions of P.L. 94-142 reached high school. Their experiences can provide much-needed information about what secondary school students with disabilities experience in their high school years. This report presents a detailed picture of their secondary school programs nationally—the necessary foundation for making effective choices about directions for the future.

The findings in this report are from the National Longitudinal Transition Study of Special Education Students (NLTS). The NLTS was mandated by the U.S. Congress in 1983 in response to growing concerns about the postschool outcomes of young people with disabilities. Previous reports from the NLTS have addressed the employment, postsecondary education, and personal independence of youth with disabilities in the years after high school

(see, for example, Wagner, Newman, D'Amico, Jay, Butler-Nalin, Marder, and Cox, 1991; Wagner, D'Amico, Marder, Newman, and Blackorby, 1992). They have documented that, whereas many young people with disabilities made successful transitions from high school to independent living as young adults, many others, especially those with severe disabilities, did not. Why not? Do the secondary school experiences of young people with disabilities provide any clues that might help us understand the wide variations in the ability of youth to transition effectively to adult roles? To understand how schools contribute to successful outcomes for young adults requires an understanding of what high school is like for students with disabilities. What courses do they take? In what settings? With what kinds of support services? What credits do they earn toward high school graduation?

With this report, we focus on the high school side of the transition process and take an in-depth look at the high school programs of secondary students with disabilities who attended regular secondary schools—92% of all secondary school-age students with disabilities.* Although some previous NLTS analyses have examined the secondary school experiences of students with disabilities (e.g., Wagner, 1991b), they were based on only students' most recent year in school, the data that were available at the time. The findings presented here encompass students' complete secondary school programs and provide more information about the special services they received from their schools.

Professionals concerned with the current status of both general and special education in secondary schools have written extensively about problems and possible solutions. The message of this literature is unmistakable: changes are needed. The nature and timing of many of the changes are still under discussion, however. Even though little of the general education literature addresses the needs of students with disabilities, it is directly relevant to them. Because the majority of secondary students with disabilities spend most of their school day in regular education classes (see Chapter 3), they have been and will continue to be affected by general education reform. Discussions about what secondary programs for students with disabilities should look like undoubtedly will continue for many years. Some of the critical issues are philosophical, focusing on the relative importance of various goals (academic, social, behavioral). Other issues are empirical. For instance, if there is consensus that students with disabilities need to acquire skills to support future employment, what types of high school programs best accomplish this goal? One starting point for discussion about change is to look at what currently exists. The findings in this report present a comprehensive look at the educational programs of secondary students in special education during the late 1980s, thus providing a national baseline against which to evaluate proposed changes in secondary programs for students with disabilities.

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* See Wagner (1991b) for a description of secondary school programs for the 8% of students with disabilities who attended special schools serving exclusively students with disabilities.

What Should Education Produce?

Much of the impetus behind the calls for reform in secondary school programs came from examinations of the outcomes of schooling. For students in both regular and special education, a plethora of indicators painted a troubling picture. Comparisons between American students and students from other countries show relatively low levels of achievement by even the best students in this country (LaPointe, Askew, and Mead, 1992a and b). Furthermore, national assessments suggest that large numbers of high school students cannot solve problems or communicate their ideas in writing (Mullis, Dossey, Foertsch, Jones, and Gentile, 1991). Even more basic skill deficits are common among youth with disabilities; parents of more than a third of youth with disabilities who had been out of secondary school less than 2 years reported that their young adult children had trouble counting change, and 4 in 10 reported that their children had trouble using a telephone book (Valdés, Williamson, and Wagner, 1990).

What education in general, and secondary schools in particular, should produce has been the topic of a debate that is at least as old as the country itself (Boyer, 1983; Phelps, 1992; Solomon and Hughes, 1992). Do schools exist to produce an educated citizenry forming the backbone of our democracy? Or is their purpose considerably more concrete: to prepare students for the labor market? For students with disabilities, some have focused on employment as a goal of education (Will, 1984), while others have emphasized the importance of residential and interpersonal goals in addition to employment (Halpern, 1985).

Secondary schools play a critical role in the lives of young people with disabilities because for many it is their last encounter with formal education. Whatever they need to know to function successfully as young adults must be learned there because many will permanently cease to be students when they leave their high schools. According to earlier findings from the NLTS, only 27% of youth with disabilities who had been out of secondary school 3 to 5 years had attended any kind of postsecondary school. Only 12% had ever attended a 2-year college, and only 4% had ever attended a 4-year college (Marder, 1992). These students are part of the 20 million 16- to 24-year-olds who do not go on to college and who have been dubbed the "forgotten half" (W. T. Grant Foundation, 1988). These students are forgotten by a society that invests heavily in colleges and universities and by school reform efforts that focus on the college bound.

Even more troublesome is the fact that many students with disabilities will leave high school without the diploma that could serve as the basis for further skill acquisition. The NLTS has found that only 56% of students with disabilities who left secondary school in a 2-year period graduated (Wagner, 1991a).

The outcomes of education are of substantial concern to the business community, which has indicated that its members cannot find the kinds of workers they need (Committee for Economic Development, 1989). A surprising degree of consensus exists as to the

characteristics that business values in young adults. Employers are looking for young people who demonstrate a set of attitudes, abilities, and behaviors associated with a sense of responsibility, self-discipline, pride, teamwork, and enthusiasm. They don't want secondary schools to focus on "narrow vocationalism," but rather on a curriculum that stresses literacy, mathematical skills, problem-solving skills, learning to learn, and adapting to change (Committee for Economic Development, 1985). As Hamilton (1986) expressed it:

> ...employers want high school graduates who can read, write, calculate, follow instructions, come to work on time and regularly, and do a hard day's work. Whatever skills are needed on the job will be taught on the job. (p. 240)

A survey of more than 4,000 employers revealed that, for entry-level jobs, employers expect a minimum of academic skills and some ability to learn things quickly, but these aspects are much less important than good work habits, proper attitudes about work and supervisors, being a good team player, and the ability to get along well with people (McPartland, Dawkins, and Braddock, 1986). Business leaders have difficulty finding workers with these skills and fear that the low achievement levels of secondary students ultimately will jeopardize the country's competitiveness in the world market. And if the schools have not done an adequate job of educating the current workforce, their capability to prepare youth for the new demands of tomorrow's workforce is even more in doubt (Committee for Economic Development, 1985).

Secondary schools face a number of challenges in preparing today's students to live in tomorrow's world. Many of these young people will want to enter the world of work. It is a world that needs new workers, but will today's students have the skills that employers are looking for? But, work is not the only aspect of adult life for which students need to be prepared. Living independently, establishing and maintaining friendships, and becoming a partner and a parent can all be part of being an adult. How should schools prepare students with disabilities to make the transition to adulthood and all it entails? How have our schools responded to the concerns about what students are or are not achieving?

General Education Responses

The data on student outcomes paint a consistent picture of unrealized potential for many of America's youth, including many young adults with disabilities. Critics turned to secondary schools as part of the problem as well as part of the potential solution. Although the most visible of the commentaries on secondary schools was probably *A Nation at Risk* (National Commission on Excellence in Education, 1983), its message was echoed by many others. With one voice, these critiques cast serious doubt on the capability of American high schools to provide an adequate education for this country's youth (Education Commission of the States, 1983; Boyer, 1983; Sizer, 1992; National Governors' Association, 1986; Carnegie Forum on Education and the Economy, 1986). As summarized by Murphy (1991), these analyses concluded that:

> ...the schools were characterized by intellectual softness, a lack of expectations and standards, inadequate leadership, a dysfunctional organizational structure, conditions of employment inconsistent with professional work, and the absence of any meaningful accountability. (p. viii)

Reforms of the past decade have taken many forms, including school-based decision-making, revamped teacher preparation programs, and parental choice (*Education Week*, 1993). One aspect of general education reform for secondary schools that has had substantial impact on students with disabilities has been the push for higher academic standards. One early response to the concern about the low achievement levels of high school students was to increase the number of academic credits required for graduation, an action taken by 36 states between 1975 and 1987 (Bodner, Clark, and Mellard, 1987). One possible impact of imposing these new requirements on the current course structure of secondary schools was that students would not have room in their schedules for courses they otherwise might have taken.

Vocational education was one possible loser in this numbers game. The value of vocational coursework for students in general education has been repeatedly questioned (Boyer, 1983; Galladay and Wulfsberg, 1981). Special educators, on the other hand, have embraced vocational training as a very necessary opportunity for students with disabilities (Berkell, 1992; Cobb and Neubert, 1992; Halpern, 1985; Edgar, 1987; Bellamy, Wilcox, Rose, and McDonnell, 1985).

Not surprisingly, states reported that the move to increase graduation requirements often conflicted with the needs of students with disabilities for vocational training (Cox, Frank, Hocutt, and Kuligowski, 1984). A secondary school in Texas that previously had been considered to have an exemplary program for students with disabilities found itself less exemplary because of reform. School staff noted that the ultimate impact of the new state requirements was to push some vocational courses completely out of the curriculum. Fewer students enrolled in vocational courses because they had less time in their schedules. As a result, the number of vocational offerings was reduced. Students with disabilities found themselves with fewer vocational options than had been available before educational reform (Knowlton and Clark, 1989). Other research has indicated that vocational course-taking in general did not decline as expected, although certain schools and districts did experience this phenomenon (Cline and White, 1992).

More recent discussions of educational reform may point to a way out of this conundrum. Instead of pitting academic against vocational courses, educators are now calling for the infusion of academic content into coursework with a vocational orientation (Phelps, 1992; Hamilton, 1990). The Southern Regional Educational Board is working with a number of states to blend higher-level academic content with strong vocational programs. Pilot states have developed task forces of vocational and academic teachers to design courses and programs that link academic learning to practical vocational applications and meet academic graduation requirements (Bottoms, Presson, and Johnson, 1992). Special educators also have supported

the concept of integrating academic and vocational curricula for students with disabilities (Cobb and Neubert, 1992).

Regardless of its value to future employment, vocational education has other benefits for students who have not performed well in conventional academic classrooms. Vocational education can be exploited for academic purposes for students who need to see a clearer connection between what they are learning and the real world (Hamilton, 1986; W. T. Grant Foundation, 1988). The "holding power" of vocational education to keep potential dropouts in school is a benefit for students with disabilities (Wagner, 1991b; Zigmond and Miller, 1992) as well as for other students who have not performed well in traditional secondary schools (Wehlage, Rutter, Smith, Lesko, and Fernandez, 1989).

Vocational courses may provide an opportunity to make both academic and vocational learning meaningful in a way that traditional academic classes do not. Wehlage and colleagues (1989) concluded their study of effective secondary school programs for at-risk youth by noting that learning in school often is too narrow. It is highly abstract, verbal, sedentary, individualist, competitive, and controlled by others, when it should be concrete, problem-oriented, active, kinesthetic, cooperative, and autonomous. The content being presented has little meaning for many students, who respond by dropping out mentally and later dropping out physically. These researchers and others (e.g., Newmann, 1992) see engagement in learning as critical to the success of schools with at-risk youth. They maintain that schools need to develop programs that engage students in the learning process by helping them see the interrelationships between their classwork and real life. Vocational courses infused with academic content may represent one avenue for helping many students, including those with disabilities, comprehend the academics and appreciate the value of what they are learning.

Special Education Issues

The calls for change in special education have been as diverse as the students themselves. Proposed changes have the potential to affect different groups of students with disabilities, different aspects of the educational process, or both. They include the provision of transition planning and services, the relationship between regular and special education for students with mild disabilities, and the "full inclusion" of students with severe disabilities in regular education programs.

The provision of transition services is one aspect of special education reform at the secondary level that has moved from discussion to implementation. The needs of young people with disabilities for additional support in moving into the world of work was acknowledged in a series of federal initiatives and culminated with a federal mandate for transition services (Will, 1984; DeStefano and Wermuth, 1992). The 1990 amendments to the Individuals with Disabilities Education Act (IDEA) required that individualized education plans

(IEPs) for all students in special education include transition services. The law provided the following definition:

> The term "transition services" means a coordinated set of activities for a student, designated within an outcome-oriented process, which promotes movement from school to post-school activities, including post-school education, vocational training, integrated employment (including supported employment), continuing and adult education, adult services, independent living, and/or community participation. [U.S.C. 1401 (a)(19)]

The groundwork for this mandate was laid in the preceding decade through legislation that acknowledged the critical role transition services play in the postschool success of young adults with disabilities (Hasazi, 1985; Rusch and Phelps, 1987; Wehman, 1990). Before 1990, a variety of state and local transition projects had been implemented, but high-quality transition services were not universally available to students in secondary special education (DeStefano and Wermuth, 1992). The NLTS collected information about transition planning for secondary students before the federal mandate and presents this information in this report.

The need to build better linkages between school and work is a concern not just for students with disabilities. This need has been recognized within general education as well, although the special education community has been more successful in crafting a response to the problem. Proposals within general education, which ultimately may benefit the transition of students with disabilities, include school-business collaboration (Committee for Economic Development, 1989), community and neighborhood service (W. T. Grant Foundation, 1988) and various ways of preparing students to be workers, such as apprenticeships (Hamilton, 1990). The appropriate linkages between these kinds of initiatives and special education are being developed through experience in numerous local schools.

In contrast to the general agreement regarding the need for transition services for students with disabilities, the appropriate allocation of responsibility for students with learning problems is a much more controversial issue within the special education community. The debate over the respective roles of regular and special education is broader than secondary schools, but it has significant implications for what secondary programs could look like for some students with disabilities. Given that students with learning disabilities constitute more than half the population of secondary students in special education (Marder and Cox, 1991), changing their programs changes the face of special education.

Currently, secondary special education consists of a variety of educational arrangements varying in both the intensity and location of various education experiences. For students with mild disabilities, a common program consists of some mix of time in regular classes with the remaining time in a special education resource room, where the teacher may be trying to achieve a variety of educational goals, including remediation of basic skills, assistance with assignments from mainstream classes, preparation for upcoming tests in other classes, or making arrangements to tape other classes. The degree of support required by the students

for their regular education classes may leave little time for remediation or other curricular elements that the students may need, such as social or survival skills (Zigmond, 1990). Special education classes for students with mild disabilities could follow a content approach, providing instruction in core subject areas, or a skills approach, which is instruction in basic skills designed to improve performance in regular education classes (Nolet and Tindal, 1993).

Other students in special education, most commonly those with more severe disabilities, have traditionally spent all or most of their day in special education classes (U. S. Department of Education, 1992). Presumably, the educational programs of students with more severe disabilities differ not only in the amount of time spent in special education classes, but in the individualized goals established for each student and the content and strategies of the instruction presented to achieve those goals.

Current discussions on inclusion and the relationship between regular and special education focus attention on the setting or placement in which instruction for students with disabilities is provided. Some have contended that the current approach to serving students with learning problems is fragmented by restrictive eligibility definitions and a lack of coordination between regular and special instruction. The proposed solutions include building support systems for regular education teachers and allowing principals greater discretion in the administration of special programs (Will, 1986). New instructional models are advocated to allow students with learning problems to remain in regular classrooms (Reynolds, Wang, and Walberg, 1987, 1988).

Opponents have argued that the proposed changes are an attempt to dismantle special education, resulting in a "reformed system" that ultimately would be detrimental to the educational well-being of the students it was designed to serve (Braaten, Kauffman, Braaten, Polsgrove, and Nelson, 1988; Kaufmann, 1989). They maintain that these proposals are not feasible given the current realities of secondary schools. These realities include a gap between the skill levels of students with learning problems and the academic demands of secondary classrooms, as well as the intensive instruction needed by these students to ameliorate their deficits (Schumaker and Deschler, 1988). The findings in this report present a detailed picture of how secondary students with learning problems are spending their time in high schools as they are currently organized. We examine the courses students take and the setting in which that instruction is provided. A forthcoming report will address the achievement of students in various class settings.

Ironically, while some segments of the special education community have been debating the appropriateness of the regular classroom for students with mild disabilities, other segments have endorsed it unequivocally for at least some part of the day for students with severe disabilities. Whereas the issue for the former group is educational appropriateness, the issues for the latter are equity and access. Many advocates for students with severe disabilities are supportive of "full inclusion models," characterized by features such as students attending their neighborhood schools, age- and grade-appropriate placements with no self-contained classes

existing at any site, and special education supports within the context of the general education class (Sailor, 1991). Recently, the National Association of State Boards of Education has endorsed this concept for all special education students with its call for state policies that support inclusive schools (NASBE, 1992). Data from the NLTS address the extent to which students with various disabilities are educated in regular schools and in regular classrooms already.

Questions about Secondary School Programs for Students with Disabilities

This report brings data from the NLTS to bear on several key questions involving secondary school programs for students with disabilities that may help inform the debate regarding future changes:

- How long does it take students with disabilities to complete secondary school? How many credits do graduates and dropouts earn?
- Over the course of their high school careers, how much time do students with disabilities spend in regular and special education classes?
- What academic courses do secondary students in special education take; what credits do they earn? Findings regarding academic course-taking are an important prerequisite for understanding the secondary school performance and postsecondary educational outcomes of young people with disabilities.
- To what extent are students with disabilities included in regular education academic classes? What classroom placements are assigned to students with different kinds of disabilities? What supports are provided to teachers with "mainstreamed" students and to those students in regular education academic classes? Findings on academic placement will ground the debate on inclusion in an empirical understanding of the current mix of regular and special education settings for students with different disabilities.
- What vocational courses do secondary students in special education take? How much vocational education are they receiving, at what level, and in what settings? A better understanding of secondary vocational experiences will lay the groundwork for strengthening the preparation of students with disabilities for the workplace of the future.
- What special services do students in special education receive during secondary school? Who receives these services? A clear picture of the nature and level of support services offered students with disabilities is an important context for understanding how they do in school and how they can be helped to do better.
- How do the course-taking and support experiences of students differ as they progress through the grade levels of secondary school? How do they differ for students who are not assigned to grade levels or who stay in high school beyond the typical 4-year course of study?

We examine each of these questions for students who differ in their disability, gender, ethnic group, and family income, factors that are known to relate to some aspects of school

experiences, school performance, and postschool outcomes. We use data drawn from the school records of the NLTS study sample, a nationally representative sample of more than 8,000 students who were ages 15 to 23 and in secondary special education in 1985. Data for these students were collected in two waves, in 1987 and in 1990, with additional data collected on a subsample of students in 1989. School records are supplemented by data collected through parent interviews and surveys of teachers and school administrators.

Chapter 2 presents a more thorough description of the NLTS and a detailed discussion of the methodology used to collect and analyze the data in this report. Chapter 3 addresses several key aspects of the secondary school experiences of students with disabilities, including the number of semesters required to complete high school, summer school attendance, total credits earned, and time spent in regular and special education settings. Chapter 4 focuses on the academic courses taken by students with disabilities, and Chapter 5 gives similar emphasis to students' vocational course-taking. Support services received by students with disabilities from their schools, including planning for the transition to postschool roles, is addressed in Chapter 6. A synthesis of findings and implications for students, schools, and public policy are presented in the concluding chapter.

Although these findings go a long way toward answering questions about what constitutes special education for secondary school students with disabilities, many of the issues considered critical to effective secondary school programs are beyond the broad lens of survey research. Whereas NLTS data tell us much about the courses students took, for example, they tell us very little about what went on in those courses. Whether the regular and special education course content and their presentation were challenging, boring, irrelevant, or inspiring is an important contributor to the overall effectiveness of the educational program. From ethnographic studies of classes for students with learning disabilities, Zigmond and Miller (1992) concluded that the substance of special education classes, including such aspects as the seriousness with which academic content is pursued and the degree to which students are expected to produce assignments and learn academic content, needs to be improved.

Quantitative analyses of transcripts also cannot inform us about the quality of the relationships between teachers and students. The extent to which students are engaged in the educational process may be closely linked to their relationships with the adults who are instructing them (Newman, 1992). Secondary students in special education in Vermont reported that their regular education courses were of the most value to them but that they felt their special education teachers cared most about them (Hasazi, Hock, and Cravedi-Cheng, 1992). We don't know how the students in the NLTS perceived the varied educational programs they received. We have, however, learned a great deal about the secondary school programs of many different types of students with disabilities. This study's contribution rests in its ability to describe the overall characteristics of students educational experiences. Additional research will be needed to explore the meaning within the variations on the general theme.

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2 MEASUREMENT AND ANALYSIS CONSIDERATIONS

by Mary Wagner, Jose Blackorby, and Kathryn Valdés

The NLTS is designed to address a number of descriptive and explanatory research questions for diverse audiences using multiple sources of data and a variety of analytic approaches reported in different formats. This chapter provides an overview of methodological issues pertinent specifically to the findings regarding secondary school programs that are reported here. For more information on the design, sampling, or measurement of the NLTS more broadly, see Wagner, Newman, and Shaver (1989) regarding data collection procedures for the first wave of NLTS data and Marder, Habina, and Prince (1992) for the second wave. Sampling issues are presented in greater detail in Javitz and Wagner (1990 and 1993).

This chapter first describes the sources of NLTS data used in this report. We then discuss several measurement issues pertaining to variables constructed for the analyses whose findings are reported here. The several analytic subsamples used for various purposes throughout the report are then described, along with our approaches to weighting the NLTS data to generalize to the population of students with disabilities and to estimating standard errors to account for the stratified sample of the NLTS. We then describe important analysis and interpretation considerations. Finally, data used for comparisons of students with disabilities and the general population of students are discussed briefly.

Data Sources

Findings regarding the broad range of school program characteristics presented in this report are based on data derived from multiple sources:

- **Secondary school transcripts**. High school transcripts were sought for all sample students who attended secondary school after the 1986-87 school year.
- **School program content forms**. For students whose school programs were not recorded on transcripts, school program content forms were completed by teachers who were familiar with students' programs. These were sought in 1990 for the most recent school year for all students who had been in secondary school at all since the 1986-87 school year.
- **School record abstracts.** As part of wave 1 data collection (1987), local school staff abstracted school record information for students' most recent school year (either the 1986-87 or 1985-86 school year). For some students included in the analyses reported here, both school record abstracts for a single year and

transcripts for more years were available. For other students, data from only the single year recorded on the school record abstract were available.

- **Student school program survey**. For all students still in school in the 1990-91 school year and for those students leaving school in the 1988-89 and 1989-90 school years who were classified as learning disabled, speech impaired, seriously emotionally disturbed, or mildly/moderately mentally retarded,* teachers were surveyed regarding their performance expectations for students and more detailed aspects of those students' school programs (this instrument is included in Marder, Habina, and Prince, 1992).
- **Parent/student telephone interviews**. In 1987, parents and, in 1990, parents and students (if they were able to respond for themselves) were administered a structured interview by telephone to obtain information on services received by the students and outcomes in the areas of employment, education, and independence.

Measurement Issues

The subsequent analytic chapters of this report present information regarding the measurement of specific variables used in those chapters. However, several general points about NLTS measures used in multiple chapters also should be clear to readers as they consider the findings reported here.

Combining data from multiple sources. Variables used in the analyses reported here combine data from various of these sources. For example, determining whether a student took vocational education at a given grade level used data for that grade level, whether they came from transcripts, school content forms, or school record abstracts. Determining whether a student received life skills training from the school combined data from these same school records (e.g., indicating whether the student took home economics as a source of life skills training) with data from parent interviews about a variety of support services students might have received from schools or other sources. See Wagner et al. (1991) for an analysis of issues related to combining data from various sources; the results fail to provide evidence against maximizing the data by combining them from different sources when appropriate.

Categorizing students by primary disability category. Information about the nature of students' disabilities came from rosters of all secondary school students in special education that were submitted by school districts included in the study. In all tables in this report, students are assigned to a disability category based on the primary disability designated by the student's school or district in the 1985-86 school year. Definitions of disability categories and criteria for assigning students to them vary from state to state and even between districts within states. Because we have relied on category assignments made by schools and districts, NLTS data should not be interpreted as describing students who truly had a particular disability, but rather as describing students who were categorized as having that disability by

* The surveys in 1988 and 1989 were part of a special study done for students in these categories only.

their school or district. Hence, descriptive data are nationally generalizable to students who were classified as having a particular disability in the 1985-86 school year.

Demographic characteristics. Findings in this report are provided for youth who differ in gender, ethnic background, and household income. For the majority of students, these measures were taken from interviews with parents in 1987. For a small number of students, interviews could not be completed in 1987, but were completed in 1990. For these students, demographic characteristics were obtained in the 1990 interviews. To the extent that characteristics were different between 1987 and 1990, some degree of measurement error is introduced for these variables, which may reduce the strength of association with other student experiences. Regarding ethnic background, only the categories of white, African American, and Hispanic had enough students to report findings for those categories separately. Students of other ethnic backgrounds are included in the samples of all students, of disability categories, of gender, and of household income, but are not reported separately by ethnic background.

Types of courses. Courses listed on students' transcripts were coded into course content areas using a modified version of the Classification of Secondary School Courses coding system developed for the National Center for Education Statistics (NCES) in 1982, and the Special Education Course Classification and Coding System developed for NCES and the National Assessment of Vocational Education. Those systems permit distinguishing courses at a fine level of detail. However, to take advantage of that level of detail, course catalogs giving descriptions of course content, prerequisites, or skill levels would be required. Obtaining catalogs from the almost 2,000 schools attended by NLTS sample members was infeasible. Therefore, course types were coded directly from course titles on transcripts, which required groups courses for analysis into fairly gross categories (e.g., English, social studies).

Credits earned. The number of credits, in Carnegie units, that were associated with courses students took generally were indicated on transcripts. For the small number of students or courses that did not have credits assigned, we inferred the number of credits from the duration or intensity of the course: a one period course for a full year was assigned a value of one Carnegie unit, a single semester course for one period was assigned a half of a Carnegie unit, etc.

Placement. Whether courses were taken in regular education or special education settings is a critical element in these analyses. In many cases, special education classes were designated clearly on transcripts. Nevertheless, school staff were asked to annotate each student's transcript so that the placement of each course was clear. (See Marder, Habina, and Prince, 1992, for copies of annotation instructions and all other data collection instruments for the second wave of NLTS data collection.)

School completion. Some aspects of school experiences are distinguished for students on the basis of their mode of school leaving—graduating, dropping out, or "aging out" by staying in school until the maximum allowable age without earning credits needed for

graduation. School leaving status was determined from school reports when these were available. In the absence of a complete school record or school-leaving report from a school, parent or student reports were used. Other analyses of NLTS data revealed a high level of agreement between parent/student reports and school reports when both sources of information about school-leaving status were available (Wagner et al., 1991, Appendix C).

Analytic Subsamples

The analyses in this report are based on data for three subsamples of NLTS students, which correspond to three data sources or combinations of them: data related to course-taking, services received, and teacher reports.

Course-taking. The first subsample is designed to maximize information regarding students' program of study in secondary schools, which is the heart of the analyses reported here, particularly those in Chapters 4 and 5. Students in this subsample were required to satisfy three conditions:

- They were enrolled in a regular (not special) secondary school in their most recent school year. The type of school attended was reported in a school background survey for each school attended by sample students.
- Data were available from a transcript, school record abstract, and/or school content form for either an ungraded program or grades 9, 10, 11, and/or 12.
- Their age while in school was less than 24 years.

A sample of 4,828 students met these criteria. However, not all students appear in any single analysis, largely because of the grade-level cohorts that are the basis of many of the analyses. Of the 4,828 students, fewer than 3,000 had data for any single grade level, and only about 2,200 had data for all four grade levels of high school. In other words, a core sample of approximately 2,200 students had data available for 4 full years. They are included in each grade-level cohort, supplemented by several hundred other students who had data available, usually for that grade level alone. Other analyses may further reduce the samples in a grade level by focusing only on students with particular characteristics (e.g., the characteristics of regular education classes for students who spent any time in regular education classes).

Services received. Because school records do not always include notations regarding services received, a more complex set of data sources and sampling conditions applies for this subsample, which is the basis of most findings reported in Chapter 6. Appropriate data were used from either parent interviews in 1987 (wave 1) or parent/student interviews in 1990 (wave 2), depending on when students were attending secondary school, or from school records of various kinds. Sample members were required to meet the following conditions:

- They were enrolled in a regular (not special) secondary school in their most recent school year. The type of school attended was reported in a school background survey for each school attended by sample students.
- Their age while in school was less than 24 years.
- Data were available from one of the following:
  - A wave 1 student record abstract, a wave 2 student school program survey, and/or a wave 2 school program content form.
  - A wave 1 parent interview for students who were in school or out of school for a year or less in 1987.
  - A wave 2 parent/student telephone interview or mail questionnaire for students who were in school or out of school for a year or less at that time.

A total of 4,716 youth met these criteria, but again, not all of these students appear in any single grade-level cohort. The samples for grade levels range from fewer than 1,200 for grade 9 to 2,230 for grade 12.

Teacher reports. The third subsample has survey data on teachers' perceptions regarding several aspects of students' secondary school programs and supports, as well as of students' behavior in school. Findings from this subsample are reported throughout, particularly with regard to transition planning in Chapter 6. Students in this subsample were required to satisfy the following conditions:

- They were enrolled in a regular (not special) secondary school in their most recent school year.
- Their age while in school was less than 24 years.
- Their age in 12th grade or in the last year of an ungraded program was between 17 and 23.
- Students' school program survey data were available for either 12th grade or an ungraded program.

It was not feasible to collect these more detailed survey data from all students in all schools each year. Hence, only 720 students met the criteria for this subsample.

Weighting the NLTS Data

In describing secondary school experiences of students with disabilities, we generally report percentages of students with a particular status or experience (e.g., the percentage taking academic classes in 9th grade). Percentages are weighted to represent students nationally; they are not percentages of the sample, but estimates for the population of students with disabilities as a whole and for students in each of 11 federal special education disability categories in use in 1985. Students were weighted to represent all students enrolled in special education in the 1985-86 school year. In other words, rather than each student counting

equally in calculating percentages, each student's value for a variable is weighted proportionate to the number of students like him/her in the full population of students with disabilities nationally. Hence, for example, values for students with learning disabilities are weighted more heavily than those for students with visual impairments when discussing students as a group because of the significantly greater number of students with learning disabilities in the population as a whole.

Table 2-1 illustrates the concept of sample weighting and its effect on percentages or means that are calculated for students with disabilities as a group. In the example in Table 2-1, 10 students are included in a sample, 1 from each of 10 disability groups, and each has a hypothetical value regarding whether that student took vocational education (1 for yes, 0 for no). Five students took vocational education, which would result in an unweighted sample mean of 50% taking vocational education. However, this would not accurately represent the national population of students with disabilities because many more students are classified as learning disabled or mentally retarded than orthopedically or other health impaired, for example. Therefore, in calculating a population estimate, we apply weights in this example that correspond to the proportion of students in the population that are from each disability category (actual NLTS weights account for disability category, age, and several other

Table 2-1

EXAMPLE OF WEIGHTED PERCENTAGE CALCULATION

	A	B	C	D
Disability Category	Number in Sample	Took Vocational Education*	Weight for Disability Category	Weighted Value for Category
Learning disabled	1	1	5.6	5.6
Emotionally disturbed	1	1	1.1	1.1
Speech impaired	1	1	.3	.3
Mentally retarded	1	0	2.4	0
Visually impaired	1	1	.1	.1
Hard of hearing	1	1	.1	.1
Deaf	1	0	.1	0
Orthopedically impaired	1	0	.1	0
Other health impaired	1	0	.1	0
Multiply handicapped/deaf-blind	1	0	.1	0
TOTAL	10	5	10	7.2
		Unweighted sample percentage = 50% (Column B total divided by Column A total)	Weighted population estimate = 72% (Column D total divided by Column C total)	

* Yes=1; No=0

aspects of students and the districts from which they were chosen, as specified in Javitz and Wagner, 1990). The sample weights for this example appear in column C. Using these weights, the weighted population estimate is 72%. The percentages in all NLTS tables are similarly weighted population estimates, whereas the sample sizes are the actual number of cases on which the weighted estimates are based (similar to the 10 cases in Table 2-1).

NLTS sample weighting involved deriving weights for all students for whom data were available in 1987 from parents or school records, as described in Javitz and Wagner (1990). Wave 1 weights provide the best estimate of the characteristics of the whole population of students with disabilities who had been secondary school special education students in the 1985-86 school year.

To reweight the subsample of 4,828 students in the course-taking analyses, the 4,716 in the school services analyses, and the 720 in the teachers' survey of secondary programs analysis to represent students as a group, we first identified the group of students we wished to represent—students who were (1) enrolled in special education in the 1985-86 school year, (2) enrolled in a regular (not special) secondary school in the 1985-86 or 1986-87 school year, (3) in 9th grade or higher when they left school, and (4) age 23 or younger while in secondary school. The universe for the teachers' perceptions subsample also represented students who, if they were in an ungraded program, were between the ages of 17 and 23 when they left school. This group of 5,442 students (3,915 for the teacher perception analysis), weighted with their wave 1 weights, provide the best picture available of the characteristics of the population of students to which the subsamples of students should generalize.

We then used the group of 5,442 students (or 3,915 for teacher perception analysis) and their wave 1 weights to calculate the following characteristics of the population as of 1987:

- **Disability**—grouped using the 11 federal special education disability categories: learning disabled; seriously emotionally disturbed; speech impaired; mentally retarded; visually impaired (partially sighted or blind); hearing impaired (hard of hearing or deaf); orthopedically impaired; other health impaired; and multiple (multiply impaired or deaf/blind). Disability category was designated by schools or districts from which students were sample originally.
- **Age**—the categories were students born in the years 1970-72; 1967-69; and 1966 or before. Age was determined from parent reports and/or school records.
- **Ethnic background**—grouped as African American, white, Hispanic, and a combined category for Native American/Alaskan native, Asian/Pacific Islander, and "other." In addition, there was a category for unknown, which included "don't know," refusals, and any other missing data. Parent reports or, if parent interviews were missing, school records were the source of ethnic background.
- **Gender**, as reported by parents or, if no parent interview was obtained, as found on school records.
- **Annual household income**—grouped as under $12,000; $12,000 to $24,999; and $25,000 and over. Those with incomes of $25,000 or less but otherwise unspecified

were grouped with those with household incomes under $12,000. In addition, there was a category for those with missing information, which included those who responded "don't know," refused to answer, indicated that the student was institutionalized, and any other missing values. Income was determined from parent report.

The third step was to calculate weights for the subsamples of students so that they matched the demographic distributions of the 5,442 (or 3,915) students on the characteristics listed above. The weighting was accomplished using Deming's algorithm, which iteratively modified the wave 1 weights for the students in each of the three subsamples until they generated demographic distributions that were very similar to those of the students used to estimate the population. Each disability class was weighted separately; the distributions of the smaller subsamples matched that of the larger sample within a fraction of 1%.

Estimating Standard Errors

Because the NLTS involves a sample of students with disabilities from which estimates are made for the broader population of students, it is important to determine the statistical variability of the population estimates—i.e., how precisely are we estimating from our sample the characteristics of the population to which the NLTS generalizes? If, for example, weighted NLTS data indicate that 60% of the population of students with disabilities took vocational education in 10th grade, we need to know how close that estimate is to the true level of enrollment that would be measured for the whole population of students. A standard error indicates the precision of the estimates; standard errors are reported in all data tables in NLTS documents to permit readers to understand the range of variability of the estimates provided.

To elaborate, the standard error of the estimate of 60% in vocational education used as an example above might be 3%. In this example, we would be confident that, 95 times out of 100, the actual percentage of the national population of students with disabilities who were vocational students would be 60%, plus or minus 1.96 times 3%, or between 54% and 66%. The width of this interval reflects the fact that the 60% estimate is based on only a sample of students, and the "luck of the draw" could result in our selecting proportionately somewhat more or fewer students in vocational education than in the national population.

Standard errors for the NLTS were computed with a procedure that differs somewhat from standard calculation routines. Standard routines assume a simple random sample, whereas the NLTS has a stratified cluster sample, which increases the standard errors of estimates compared with a simple random sample. In addition, the reweighting in wave 2 introduced a small amount of additional variability.

Pseudo-replication is widely accepted as a variance estimation technique for databases that have the sample characteristics of the NLTS. However, it is not cost-effective for estimating the standard errors of the thousands of variables and subpopulations tabulated in the numerous NLTS reports. Therefore, pseudo-replication was conducted on a limited

number of variables to calibrate a cost-effective approximation formula. The procedures used in this calibration are described in Javitz and Wagner (1990). These procedures generated the standard errors reported for percentages of students with particular experiences at a given point in time (e.g., the percentage of students enrolled in vocational education in 12th grade, the percentage of students receiving tutoring assistance in 10th grade).

Analysis Issues and Strategy

Interpreting Grade-Level Samples

Many of the findings in this report are presented in conjunction with grade-level designations; that is, we present the number of students taking English in 9th grade, 10th grade, etc. Further, we generally present these grade-level data in a single table for a particular measure. However, each grade level constitutes a different subsample. The proper interpretation of grade-level analyses considers each grade level as a separate cohort. The findings for each grade level and the differences between grade levels are accurate for each grade-level cohort, but should not be interpreted as a trend observed for particular students as they move from grade level to grade level. As an example, we might observe an improvement in student performance when comparing the cohort of 12th-graders with the cohort of 9th-graders, which might reflect the different composition of the two cohorts (dropouts with poor performance were no longer represented in the 12th-grade cohort), rather than a pattern of improving performance among students who stay in school the entire 4 years.

We chose the grade-level cohort approach to analysis, rather than concentrating on trends for students who stay in school for the full 4 years, for several reasons. First, a large percentage of students with disabilities drop out of school; eliminating those students from analysis would limit what we could learn about the effectiveness of school programs for students with disabilities.

Second, we wished to make grade-level estimates as accurately as possible. Thus, we maximized the sample size for each cohort by including students who had any information for a particular grade level, irrespective of whether they had data available for any other grade level. That is, we may have had course-taking data for some students only in 10th grade and not for any other grade level. Thus, different subsamples comprise each grade level. The separate cohorts have different characteristics because they are independently derived, as well as because each subsequent cohort is "purged" of the dropouts who left school before that grade level.

Table 2-2 describes the characteristics of each grade-level cohort. There are no dramatic or statistically significant aggregate differences between grade levels with respect to disability and demographic characteristics. However, there are marginal shifts over time. For example, there are proportionally more students with learning disabilities in 12th grade than in 9th grade, and proportionately fewer students with serious emotional disturbances or mental retardation.

Table 2-2

STUDENT BACKGROUND CHARACTERISTICS, BY GRADE LEVEL

Characteristic	Grade Level 9th	10th	11th	12th	Not Assigned to Grade Level
Percentage categorized as:					
Learning disabled	61.6 (1.8)	61.5 (1.8)	63.9 (1.8)	64.8 (1.7)	30.8 (3.9)
Emotionally disturbed	9.7 (1.1)	9.7 (1.1)	8.2 (1.1)	8.0 (1.0)	7.1 (2.2)
Speech impaired	4.2 (.7)	4.1 (.7)	4.2 (.8)	4.2 (.7)	.6 (.7)
Mentally retarded	19.4 (1.5)	19.5 (1.5)	18.5 (1.5)	18.0 (1.4)	52.9 (4.2)
Visually impaired	.6 (.3)	.6 (.3)	.6 (.3)	.6 (.3)	.4 (.6)
Hard of hearing	1.0 (.4)	1.0 (.4)	1.0 (.4)	1.0 (.3)	.6 (.6)
Deaf	.4 (.2)	.5 (.3)	.5 (.3)	.5 (.2)	.2 (.4)
Orthopedically impaired	1.2 (.4)	1.2 (.4)	1.2 (.4)	1.2 (.4)	1.1 (.9)
Other health impaired	1.3 (.4)	1.3 (.4)	1.3 (.4)	1.1 (.4)	1.6 (1.0)
Mentally handicapped	.6 (.3)	.7 (.3)	.6 (.3)	.6 (.3)	4.2 (1.7)
Deaf/blind	<.1 (.1)	<.1 (.1)	<.1 (.1)	<.1 (.1)	.4 (.5)
Average age in years	15.1 (<.1)	16.1 (.1)	17.1 (<.1)	18.1 (<.1)	18.5 (.2)
Gender (percent)					
Male	68.3 (1.7)	67.8 (1.8)	68.8 (1.8)	68.8 (1.6)	66.9 (4.0)
Female	31.7 (1.7)	32.2 (1.8)	31.2 (1.8)	31.2 (1.6)	33.1 (4.0)
Ethnic background (percent)					
White	67.4 (1.9)	68.5 (1.9)	71.4 (1.9)	71.4 (1.7)	53.5 (4.5)
African American	22.4 (1.7)	21.9 (1.7)	19.6 (1.6)	19.7 (1.5)	24.3 (3.9)
Hispanic	7.7 (1.1)	7.1 (1.1)	6.6 (1.0)	6.2 (.9)	17.3 (3.4)
Percentage with annual household income of:					
Less than $12,000	24.3 (1.8)	23.8 (1.9)	23.4 (1.9)	21.6 (1.7)	24.4 (4.3)
$12,000 - $25,000	23.4 (1.8)	22.6 (1.8)	22.6 (1.8)	22.2 (1.7)	44.4 (4.9)
More than $25,000	52.3 (2.1)	53.6 (2.2)	54.0 (2.2)	56.3 (2.0)	31.1 (4.6)
n	2,979	2,860	2,774	3,282	483

* "All conditions" includes youth in each of the 11 federal special education disability categories. Percentages are reported separately only for categories with at least 25 students.

There are similarly small shifts in the distributions of ethnic background and household income: there are proportionately more white students and students from families earning more than $25,000 annually. None of these differences is statistically significant, however.

Despite only marginal shifts in the aggregate, these small changes can be proportionately large for a given disability group or demographic category. For example, students with serious emotional disturbances change only 2 percentage points in their representation in the aggregate disability distribution, yet that is a relatively large proportion of this small category of students. Overall, approximately 50% of such students do not complete school. Thus, it is important to recognize that differences exist across the grade levels on dropout-related variables. In this report, we stress this point where it is relevant.

Period Effects

In longitudinal research, such as the NLTS, it is possible that external factors that occur as time passes can influence the findings, independent of issues addressed in the study. These external influences on data are referred to as period effects—differences between sample members at different time points that result from the difference in time points, not from real changes in the circumstances of the sample members. One example of period effect would result from a change in the minimum wage rate over the course of a study that could be interpreted as an improvement in the quality of the job held by an individual, rather than to an across-the-board change in wage that reflected nothing about a real job change.

The issue of period effects is germane to this report because the mid-to-late 1980s were years of active reform in education. Some, although not the majority of schools and school programs were changing in an effort to improve student performance. It is possible, then, that school reforms could result in the school program experiences of 11th graders in 1985, for example, being substantially different than the programs of 11th graders in 1989. Because we have combined data for a grade level, regardless of the calendar year in which a student experienced that grade level, these differences would be masked and could potentially lead to misrepresentation of school experiences.

We investigated this issue for a series of school program variables in the manner depicted in Figure 2-1. In general, there was no consistent pattern or trend in changes in program factors associated with calendar year. For example, participation in regular occupational vocational education remained unchanged for 9th and 10th graders from 1984 through 1989. Thus, throughout this report, we treat grade level experiences together, regardless of the year in which they occurred.

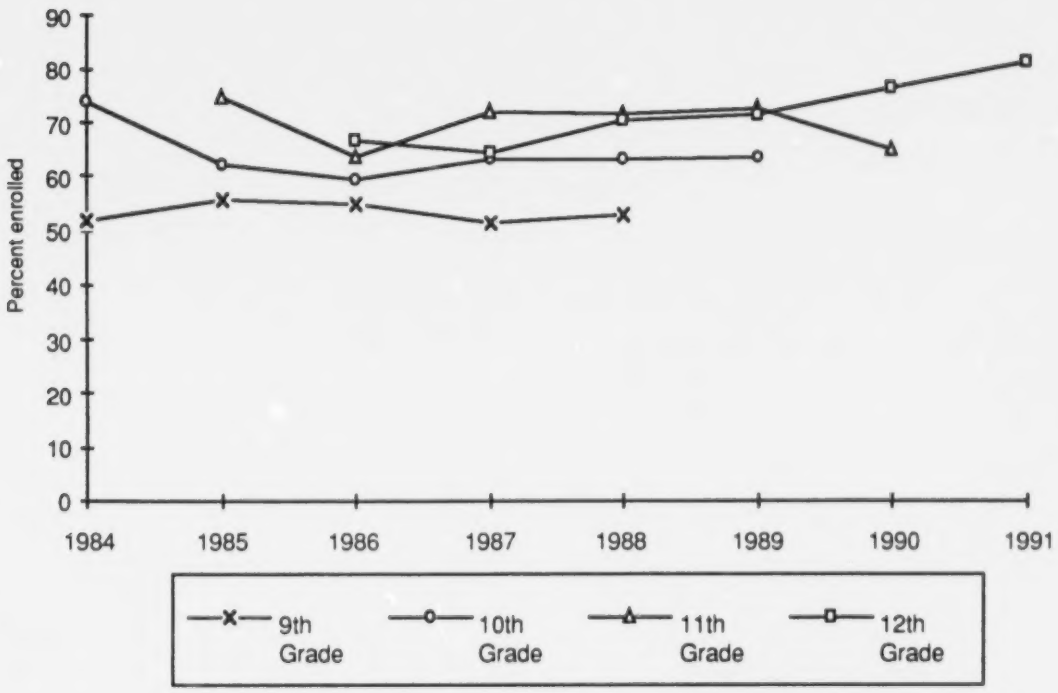

Figure 2-1 PARTICIPATION IN OCCUPATIONAL VOCATIONAL EDUCATION IN REGULAR EDUCATION SETTINGS, BY CALENDAR YEAR AND GRADE LEVEL

Analyses of Credits Earned

One measure of secondary education is to ascertain the number of credits that students earn as they progress toward graduation. However, there are two important considerations when interpreting credits earned. First, we calculated the number of credits earned in particular areas by categories of students (e.g., all students with disabilities or all students with learning disabilities), whether or not they took the class. In many instances, this is a minor problem because virtually all students participated (e.g., academics). In others, however, the rate of participation is comparatively low and the resulting estimates including all the nonparticipants inaccurately reflect the experience of those who took the class (e.g., prevocational education). In these cases, we present summaries for both the population as a whole and the subset of those who participated in the course or activity.

Second, many students with disabilities did not receive passing grades in their classes (a subject dealt with in depth in Wagner, Blackorby, and Hebbeler, 1993). This, of course, results in their failing to earn credits in those classes. Thus, the performance aspect of credits is included in the summaries but fails to distinguish between students who failed the class and those who simply did not take it. This affects students in some categories more than others. For example, students with serious emotional disturbances were more likely to fail classes than

were peers in most other disability categories, which means that their credits earned do not reflect the time they may have spent in those classes. We seek to take this phenomenon into account in our interpretations.

Teacher Survey Analyses

The NLTS teacher survey allows the exploration of a range of critical areas inaccessible through analyses of transcripts. In this report, we have analyses of supports offered to students and teaching personnel, as well as students' behavior in different settings. An important consideration of these data, however, is that they focus largely on 12th-graders or students not assigned to grade levels. These students are likely to be different from students in the earlier grades, a proportion of whom would be dropouts.

With this background information on the sample, the data, and the analytic approach in mind, we turn now to the task of describing secondary school experiences of students with disabilities.

Comparisons with the General Population of Students

Unlike many other NLTS analyses (e.g., postschool employment), our analyses of secondary school programs do not have direct statistical comparisons to students in the general population. Instead, we draw comparisons based on published data. The closest available data derive from the National High School Transcript Study (NHSTS; Hayward, 1989). Where appropriate, we make comparisons between the two studies. There are, however, substantial differences in sampling strategies between the two studies, which may complicate some comparisons. In addition, there simply are no general population estimates available for comparisons involving the service or teacher survey data reported here.

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3 OVERVIEW OF THE HIGH SCHOOL EXPERIENCES OF STUDENTS WITH DISABILITIES

by Kathleen Hebbeler

Secondary schools across the United States share a surprisingly large number of similar characteristics, and the corresponding vocabulary is recognized nationwide. Students must take a minimum number of courses for which they earn "credits." As their credits accumulate, their status changes from "freshman" to "sophomore" to "junior," until they acquire "senior" standing and eventually earn enough credits or "Carnegie units" to "graduate." Schools record the courses students take and the grades they receive on "transcripts," which serve as a written history of students' high school programs.

For many students with disabilities, the features of secondary school and the corresponding vocabulary are indistinguishable from those of their peers without disabilities. They attend comprehensive high schools, earn credits to move from freshman to senior status, and have their programs and progress duly recorded on transcripts. But these students' high school experiences can potentially differ from those of typical students on one critical dimension: many students with disabilities spend some portion of their day in special education classes.

The vocabulary of the common high school experience applies less well to other students with disabilities. Some go to schools attended only by students with disabilities, giving them a particularly distinctive high school experience. Others are in comprehensive high schools but are not assigned to a grade level, do not earn credits for their coursework, and may interact largely with other students with disabilities.

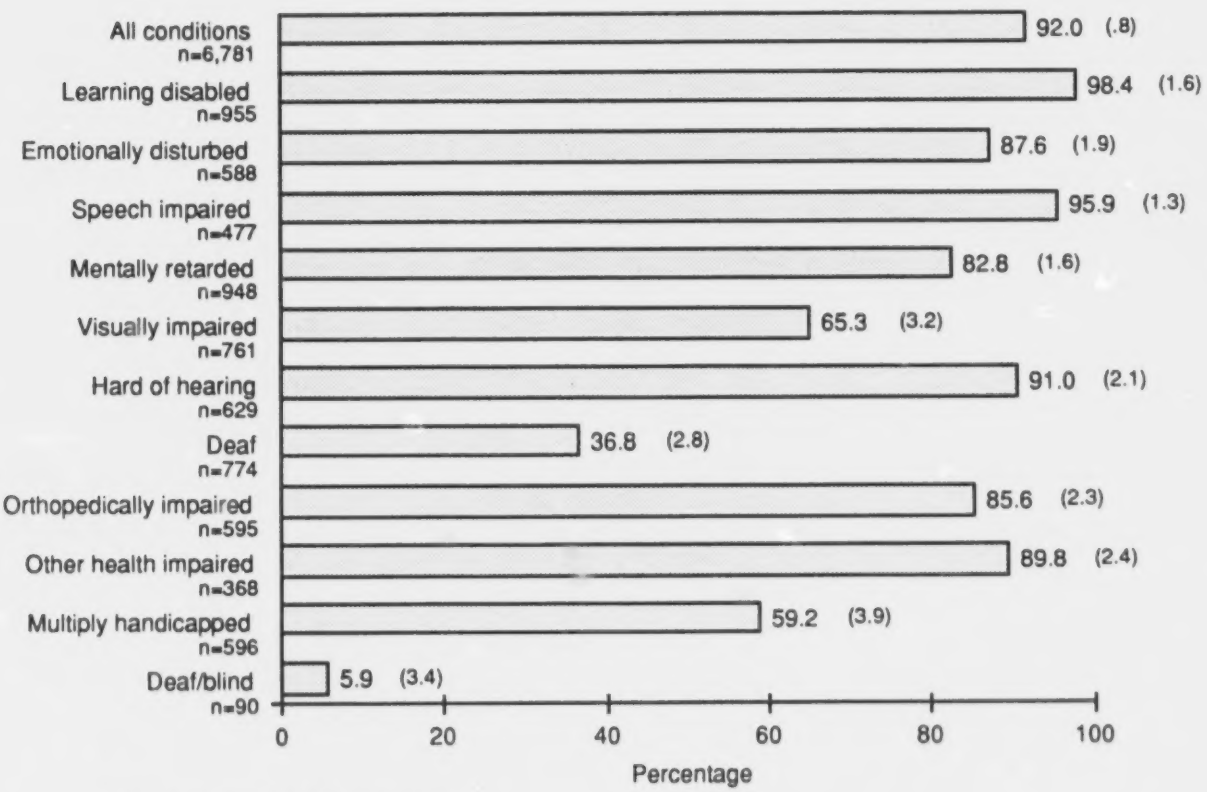
The purpose of this chapter is to describe these basic, overriding characteristics of the high school experiences of students with disabilities in comprehensive secondary schools. This includes attributes of their programs, the number and types of credits earned, and the time they spent in regular education classes. A second purpose is to provide a framework for the analyses presented in the rest of this report. Although this report describes the secondary school programs of students with disabilities who attended regular schools, some findings apply only to selected groups of students, for instance, those assigned to a grade level. This chapter provides important background information on the students who are and are not included in analyses presented in later chapters.

The first section of the chapter describes the general features of the high school programs of students with disabilities, beginning with which students attended regular schools. This section also reports on some of the common features of the secondary school experience for these

students. The second section addresses various patterns of secondary school attendance, including an analysis of modes of school completion. The third section describes the number and types of credits earned by students with disabilities who earned credits, as a way of summarizing students' coursework. The chapter closes with a discussion of student placement, as measured by the proportion of class time students spent in regular education classes.

General Features of the High School Program

We begin with a look at the proportion of students with disabilities who attended comprehensive high schools, the students that are the focus of this report. The NLTS has found that 92% of secondary school students with disabilities attended regular schools (Wagner, 1991b). As shown in Figure 3-1, enrollment in regular schools varied considerably



Standard errors are in parentheses.

FIGURE 3-1 YOUTH WITH DISABILITIES WHO ATTENDED REGULAR SECONDARY SCHOOLS, BY DISABILITY CATEGORY

for students with different disabilities. Nearly all students with learning disabilities were in regular schools, as were more than 90% of students who had speech impairments or who were hard of hearing. On the other hand, only about one-third of students who were classified as deaf and very few students classified as deaf/blind were in regular secondary schools. The reader is reminded that the findings reported in the following chapters apply only to the segment of each disability group that attended regular high schools.* School programs for students in special schools were different in several respects (Wagner, 1991b).

Within regular secondary schools, the school programs of students with disabilities were in many ways more diverse than those of their nondisabled peers. Whereas some students with disabilities earned credits and progressed from sophomore to junior status and ultimately to graduation, other students with disabilities were not assigned to grade levels. These students generally attended school until they reached the legal age beyond which they were not allowed to remain.

The NLTS examined the proportion of students who were assigned to a grade level and the proportion who received transcripts as records of their progress. These data are presented in Table 3-1. Overall, 95% of students with disabilities in regular secondary schools were assigned to a grade level, and the majority of students within each disability group proceeded through high school with a grade-level assignment. The groups with the fewest students assigned to a grade level were students with multiple impairments (67% assigned to a grade level) and students with mental retardation (87%). These same two groups were the least likely to have received transcripts. Overall, 98% of students with disabilities had their school programs recorded on transcripts. The figure is not much lower for students with mental retardation, 94% of whom received transcripts, but is much lower for students with multiple impairments, only 75% of whom received transcripts.

In later chapters, we describe separately the course-taking and support services of students who were not assigned to a grade level. Readers should keep in mind that this group includes a disproportionate number of students with mental retardation and multiple impairments, and relatively fewer students with learning disabilities, for example, compared with students assigned to a grade level.

School Attendance Patterns

Secondary school students make several kinds of choices during their school careers that strongly influence their school experiences. One set of choices involves their attendance pattern. The "bottom line" of school attendance is whether students choose to attend school

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* Students with deaf-blindness attended special schools in substantial numbers. In fact, because nearly all students with deaf-blindness attended special schools, they were not represented in sufficient numbers in regular schools to be included as a separate category in this report. However, the few deaf/blind students in regular schools are included in statistics calculated for the total population.

Table 3-1

GRADE-LEVEL ASSIGNMENT AND RECEIPT OF TRANSCRIPTS

	Assigned to a Grade Level			Received Transcripts		
Disability Category	Percentage	Standard Error	n	Percentage	Standard Error	n
All conditions*	95.2	.6	4,828	98.1	.5	2,942
Learning disabled	98.1	1.1	928	99.6	.3	516
Emotionally disturbed	96.5	.7	497	98.9	.8	273
Speech impaired	98.6	1.6	413	99.1	.7	27.3
Mentally retarded	87.0	1.3	795	94.1	1.5	429
Visually impaired	95.9	1.1	383	98.1	1.1	268
Hard of hearing	98.5	1.1	559	99.5	.5	383
Deaf	96.4	1.5	262	100.0	.0	176
Orthopedically impaired	93.9	1.4	475	96.9	1.3	302
Other health impaired	93.6	1.8	304	96.9	1.6	196
Multiply handicapped	67.4	4.4	201	74.9	5.3	120

* "All conditions" includes youths in each of the 11 federal special education disability categories. Percentages are reported separately only for categories with at least 25 students.

Note: Based on students in regular high schools.

long enough to graduate or to reach the maximum age limit for attendance allowed for students with disabilities. Other aspects of attendance include enrollment in summer school and the number of semesters required to complete secondary school. Each of these aspects of attendance is described below.

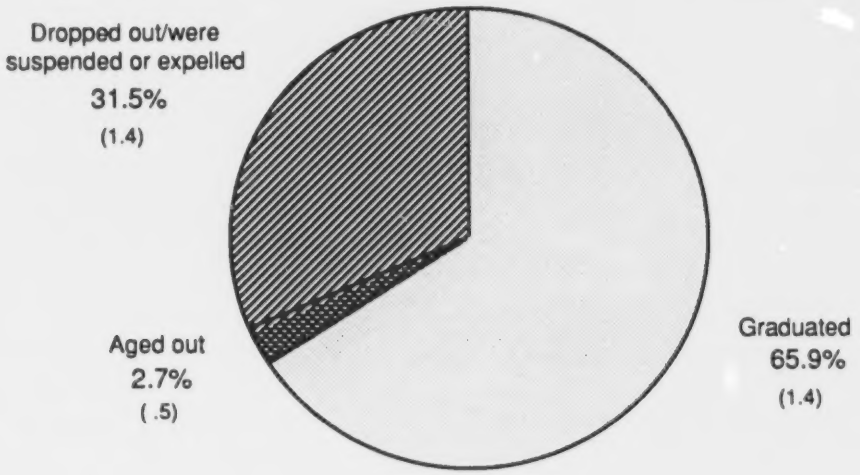
High School Completion*

How long a young person stays in high school is a critical defining characteristic of the high school experience. The student who graduates has a very different experience from the student who drops out during 9th grade. As previous NLTS reports have shown, the difference is not simply in the length of time in school, but involves several other areas, such as

* The issue of how students with disabilities exited from school in general and the special case of dropping out is dealt with in depth in Wagner, Blackorby, and Hebbeler (1993). The basic findings are reported here because some of the questions addressed in this report, such as how many credits students with disabilities earn, require separate answers for dropouts and graduates.

achievement and attendance (Wagner, 1991a). Furthermore, this difference in high school experiences is only one of many events that influence the life trajectories of graduates and dropouts as time passes (Wagner, D'Amico, Marder, Newman, and Blackorby, 1992).

Among students with disabilities who left secondary school over a 5-year period, 66% graduated, 3% aged out, and 32% dropped out or were expelled or suspended (Figure 3-2). Students with different disabilities display striking differences in the manner by which they left school. As shown in Figure 3-3, more than 80% of students who were classified as visually impaired, hard of hearing, deaf, or orthopedically impaired graduated. For students with learning disabilities, mental retardation, other health impairments, or multiple disabilities, the figure is roughly 70%. For students with serious emotional disturbances, only 48% of those exiting did so by graduating. These students had the highest dropout rate by far of any of the groups; half of students with serious emotional disturbances left school by dropping out. Students with multiple impairments aged out at the highest rate; 14% of these students became too old to continue attending high school.*



Standard errors are in parentheses.

FIGURE 3-2 SCHOOL COMPLETION STATUS OF YOUTH WITH DISABILITIES WHO ATTENDED REGULAR SCHOOLS (n = 4,751)

* These figures differ slightly from those in previous NLTS reports because earlier figures were computed when fewer of the sample had exited school and included students in special schools.

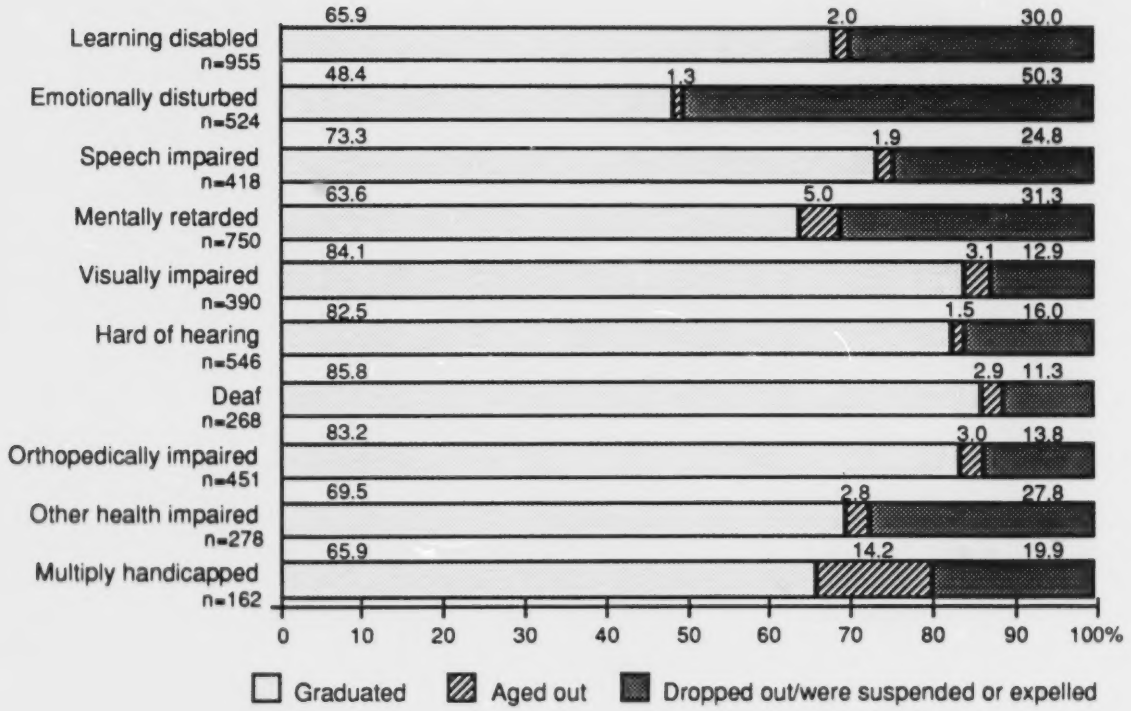


FIGURE 3-3 SCHOOL COMPLETION STATUS OF YOUTH WITH DISABILITIES WHO ATTENDED REGULAR SCHOOLS, BY DISABILITY CATEGORY

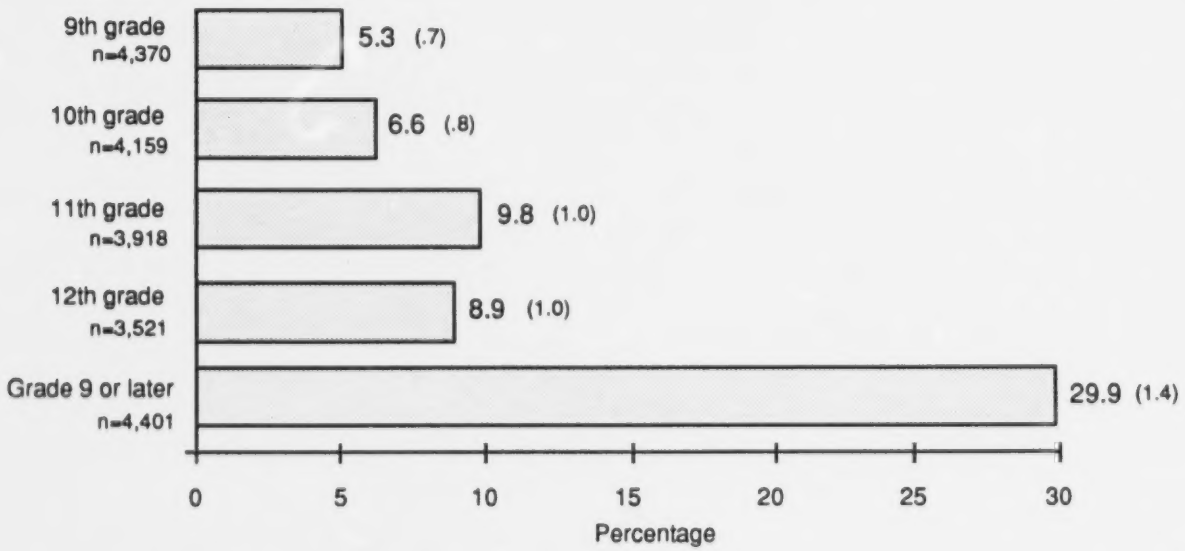
The students described above as dropouts were those who had left school before graduating and, by the time of data collection, had not returned to secondary school. However, some students left school but eventually returned to become graduates or to age out. The phrase "stopping out" is used to describe students who returned to secondary school relatively close to the time they stopped attending. These students could have picked back up where they left off, added new courses to their transcripts, and completed school or dropped out again.

Stopping out was very rare among students with disabilities. Overall, fewer than 2% of students stopped attending and then returned to secondary schools. There were no differences among students with different disabilities, genders, ethnic backgrounds, or family incomes, and no differences between those who eventually went on to graduate and those who later dropped out again.

"Stopouts" do not include students who dropped out and decided later to complete their schooling and earned a GED. These students effectively ended their secondary school experience and opted for another method of completion. We know from the NLTS analyses

that only 3% of students with disabilities who dropped out later elected to finish school through this route (Marder, 1992). In sum, among students with disabilities who stopped attending secondary schools, few later completed their secondary educations, either by returning to secondary school or by earning a GED.

Figure 3-4 depicts the grade levels at which students who ever were enrolled in grades 9 through 12 left school by dropping out. Five percent of 9th-grade students dropped out before reaching 10th grade. Marginal increases in the dropout rate occurred in 10th and 11th grades (7% and 10%). Nine percent of students enrolled in 12th grade left school by dropping out. In addition, earlier NLTS work suggested that 8% had dropped out before reaching 9th grade.* In interpreting the findings reported in the remainder of this document, it is important to be aware that each succeeding year of secondary school is a somewhat different group of students, a group that is "purged" of students who dropped out the year before. Students with disabilities who drop out of school are disproportionately students with learning and emotional disturbances, students who have had high absenteeism and who have failed courses, students



Standard errors are in parentheses.

Base: Students in regular schools assigned to a grade level. Each grade level is based only on students who attended in that grade level.

FIGURE 3-4 PERCENTAGE OF STUDENTS WITH DISABILITIES AT EACH GRADE LEVEL WHO DROPPED OUT

* The sum of this 8% and the 30% cumulative dropout rate in Figure 3-4 exceeds the total dropout rate of 32% because the base for the grade-level figure includes only students assigned to grade levels—students who dropped out at much higher rates than students not assigned to grade levels. Hence, the 30% figure is somewhat higher than would be the case if all students were included.

who have had disciplinary problems, and those who affiliate strongly with friends outside of school and not with social groups of various kinds within the school (Wagner, 1991a). This marginal change in the student body with each successive grade level might be reflected in the school programs that persisting students choose. Twelfth-graders in special education are not just older than 9th-graders. By 12th grade, a substantial proportion of students who experienced various school-related difficulties are no longer in school.

Summer School Enrollment

A variation on the typical secondary school attendance pattern is to attend summer school. Table 3-2 shows that 16% of students with disabilities supplemented their school-year program by attending summer school sometime during their high school careers. Interestingly, students who might have some of the greatest needs for additional learning time—students with mental retardation or multiple impairments—hardly attended summer school at all. On the basis of their transcripts, fewer than 10% of either group ever attended summer school. Perhaps this reflects the limited course offerings in summer school, courses that might not be appropriate for students in these categories. Alternatively, because students from these two groups were the ones schools were most likely to treat differently for record-keeping purposes, their actual participation rate in summer school may have been somewhat higher than school records reveal.

Table 3-2

SUMMER SCHOOL ATTENDANCE, BY DISABILITY CATEGORY

Disability Category	Percentage Attending Summer School	Standard Error	n
All conditions*	16.5	1.5	2,575
Learning disabled	16.6	2.2	480
Emotionally disturbed	21.1	3.4	240
Speech impaired	22.4	3.4	248
Mentally retarded	8.7	2.0	336
Visually impaired	31.2	3.9	241
Hard of hearing	28.2	3.1	348
Deaf	27.4	4.5	167
Orthopedically impaired	29.1	3.7	262
Other health impaired	38.7	4.8	176
Multiply handicapped	8.6	4.4	73

* "All conditions" includes youth in each of the 11 federal special education disability categories. Percentages are reported separately only for categories with at least 25 students.

Base: Students with complete transcripts for their time in school.

Summer school attendance was highest for students with other health impairments, 39% of whom attended summer school. Possibly these young people's health problems required them to miss school or prevented them from keeping up during the regular school year. Other groups with high rates of attendance in summer school were students classified as visually impaired, hard of hearing, or deaf. These students also had the highest rates of postsecondary school enrollment after leaving high school (Marder, 1992). Perhaps their summer school attendance reflected higher education aspirations and was a method of taking courses that would assist them in getting into postsecondary schools.

Graduates did not differ from dropouts or ageouts in their attendance at summer school. Males were more likely to have attended than females (19% vs. 12%; $p<.05$). African American students were more likely to have attended than white students (24% vs. 14%, $p<.05$); neither group differed significantly from Hispanic students (22%). Students with low or high family incomes were more likely to have attended summer school than those in the middle (19% and 20% vs. 10%, $p<.05$), suggesting that summer school attendance is influenced by both student need and family resources.

Number of Semesters Completed

Another common variation on the typical secondary school attendance pattern of 8 semesters or 4 years is to attend for one or more additional semesters, either by taking three or more semesters to complete a particular grade or by remaining in school for an "extended 12th grade," a time to supplement both academic and vocational skills before making the transition to postsecondary roles and responsibilities. The number of semesters attended by students with disabilities before exit is shown in Table 3-3 for students with disabilities overall and separately for graduates and dropouts. The average number of semesters attended by students with disabilities as a group was 7.4, which takes into account the relatively high proportion of dropouts in this student population. There were no differences in number of semesters attended by graduates or dropouts of different genders, ethnic backgrounds, or family incomes.

The average number of semesters attended by graduates was 8.1. The majority of graduates with disabilities, 90%, followed the typical attendance pattern and finished school in 8 semesters; 8% finished in 9 or more semesters, and the remainder finished in 7 or fewer. Attendance for the disability groups was very similar, with graduates from most groups averaging 8.1 to 8.3 semesters. The one exception was students with multiple impairments, who averaged 8.6 semesters before graduating.

Dropouts varied substantially in the number of semesters attended. Across all disability groups, 21% attended 8 or more semesters and yet had not earned enough credits to graduate. On the other hand, 47% attended 5 or fewer semesters; 25% attended 3 or fewer semesters. The numbers of semesters attended before dropping out varied somewhat

Table 3-3

AVERAGE NUMBER OF SEMESTERS ATTENDED, BY DISABILITY CATEGORY AND SCHOOL COMPLETION STATUS

		Primary Disability Category:									
	All Conditions*	Learning Disabled	Emotionally Disturbed	Speech Impaired	Mentally Retarded	Visually Impaired	Hard of Hearing	Deaf	Orthopedically Impaired	Other Health Impaired	Multiply Handicapped
All students											
Average semesters attended	7.4 (.1)	7.5 (.1)	7.0 (.2)	7.6 (.1)	7.3 (.2)	7.8 (.1)	7.8 (.1)	8.0 (.1)	8.0 (.1)	7.6 (.2)	8.5 (.3)
n	2,575	480	240	248	336	241	348	167	262	176	73
Graduates											
Average semesters attended	8.1 (<.1)	8.1 (<.1)	8.3 (.1)	8.1 (.1)	8.2 (.1)	8.2 (.1)	8.1 (<.1)	8.2 (.1)	8.2 (.1)	8.3 (.1)	8.6 (.3)
Percentage attending:											
7 or fewer semesters	2.6 (.8)	2.1 (1.1)	4.3 (2.4)	2.4 (1.5)	3.4 (1.6)	2.9 (1.6)	2.2 (1.2)	2.5 (1.8)	2.0 (1.4)	2.3 (2.0)	9.4 (5.3)
8 semesters	89.6 (1.5)	9.18 (2.0)	81.6 (4.6)	88.9 (3.1)	86.2 (2.9)	88.2 (3.1)	92.3 (2.2)	86.7 (3.8)	88.6 (3.0)	84.5 (4.7)	68.9 (8.4)
9 or more semesters	7.8 (1.3)	6.1 (1.7)	14.1 (4.1)	8.8 (2.8)	10.4 (2.6)	8.9 (2.7)	5.4 (1.9)	10.8 (3.5)	9.3 (2.8)	13.2 (4.4)	21.7 (7.5)
n	1,741	309	119	170	228	187	254	134	184	98	54
Dropouts											
Average semesters attended	5.3 (.2)	5.6 (.3)	5.0 (.4)	5.3 (.6)	4.3 (.3)	5.7 (.5)	5.9 (.5)	--	5.8 (.5)	5.4 (.3)	--
Percentage attending:											
3 or fewer semesters	24.9 (3.2)	17.8 (4.6)	35.5 (6.4)	39.2 (9.6)	40.3 (7.2)	15.2 (9.2)	20.7 (8.8)	--	12.9 (8.5)	29.9 (9.3)	--
4 or 5 semesters	22.1 (3.1)	24.0 (5.1)	17.1 (5.0)	10.0 (5.9)	22.4 (6.2)	22.9 (10.8)	9.4 (6.4)	--	28.2 (11.5)	16.1 (7.5)	--
6 or 7 semesters	31.9 (3.4)	36.0 (5.7)	24.3 (5.7)	20.3 (7.9)	24.1 (6.3)	43.6 (12.7)	39.6 (10.7)	--	37.6 (12.5)	28.6 (9.2)	--
8 or more semesters	21.1 (3.0)	22.2 (5.0)	23.1 (5.6)	30.4 (9.0)	13.2 (5.0)	18.3 (9.9)	30.3 (10.0)	--	21.4 (10.5)	25.4 (8.9)	--
n	469	115	92	43	76	25	35	--	240	137	--

Standard errors are in parentheses.

* "All conditions" includes youth in all 11 federal special education disability categories. Percentages are reported separately only for categories with at least 25 students.

between disability categories, but there also was a great deal of variability within each of the groups. Students with mental retardation, speech impairments, or emotional disturbances dropped out after completing the fewest semesters. Forty percent of students with mental retardation who dropped out did so before completing 4 semesters. The comparable figures for the other two disability groups were 39% and 36%. Interestingly, students with speech impairments also were among those who stayed the longest before dropping out; 30% of these students and students who were hard of hearing completed 8 or more semesters. With the exception of students with mental retardation or visual impairments, in each disability group, from 20% to 30% of dropouts completed 8 or more semesters before leaving school.

A small minority of students with disabilities, 1.5%, showed an unusual attendance pattern in that they stayed on an additional year in school, often despite having met the requirements for graduation. These students might have been taking advantage of the extra time in secondary school legally available to them as special education students. The students most likely to attend "extended 12th grade" were students with multiple impairments; 13% stayed an extra year beyond grade 12. Other groups who opted to stay on most frequently were youth with orthopedic impairments (4%), other health impairments (4%), and mental retardation (3%). The figure for all other groups was 1.5% or less. There were no differences by gender, ethnicity, or family income in participation in extended 12th grade. The courses taken by these students during this extra year are described in later chapters in the report.

Nearly one-fourth of the graduates (23%) supplemented the standard 8-semester high school program with either summer school or extra semesters, as shown in Table 3-4. Students with other health impairments were most likely to have extended their programs; 50% attended either an extra semester or summer school. One-third or more of students with visual impairments, hearing impairments, deafness, or orthopedic impairments also attended more secondary school than the standard 8 fall-spring semesters. Graduates with mental retardation were the least likely to have supplemented their secondary education program with extra time in class. Only 20% did so ($p<.01$ compared with students with emotional disturbances). Possibly a range of different achievement standards were operating for students with disabilities. Students whose achievement levels and course loads most closely resembled those of their nondisabled peers were those who either needed or chose to take the extra work to keep up. The standards for other students with disabilities may have differed enough from those for other students that the extra course work was not required.

Table 3-4

GRADUATES WITH DISABILITIES WHO ATTENDED SUMMER SCHOOL OR EXTRA SEMESTERS

Disability Category	Percentage Attending Summer School or Extra Semesters	Standard Error	n
All conditions*	23.3	2.1	1,741
Learning disabled	21.8	3.0	309
Emotionally disturbed	31.9	5.5	119
Speech impaired	26.9	4.4	170
Mentally retarded	19.8	3.4	228
Visually impaired	39.8	4.6	187
Hard of hearing	39.4	5.5	134
Deaf	39.4	5.5	134
Orthopedically impaired	35.6	4.6	184
Other health impaired	49.7	6.5	98
Multiply handicapped	28.7	8.2	54

* "All conditions" includes youth in all 11 federal special education disability categories. Percentages are reported separately only for categories with at least 25 students.

Base: Students with complete transcripts for their time in school.

Age at Exit

The fact that some students took more than 8 semesters to complete school suggests that some students with disabilities were older than typical students at their grade levels at the time that they left school. In fact, 34% of students with disabilities assigned to a grade level were overage for that grade level. Figure 3-5 shows the ages at which graduates, dropouts, and ageouts left school. Graduates with disabilities were likely to be older than the typical age at graduation of 17 or 18. The largest proportion of graduates, 44%, were 19 years old, and one-fourth were 20 or older. The average age for graduates was 19.1 years. Dropouts, too, were not likely to have left school at the earliest legal age of 16; almost half of dropouts were still in school at age 19. Their average age at exit was 18.4.

The data for ageouts are somewhat surprising in that 48% left school before age 21. Because schools are required by law to serve students in special education until age 21, it is technically impossible to age out before then (although some students may have been declassified from special education between 1985, when they were included in the NLTS, and

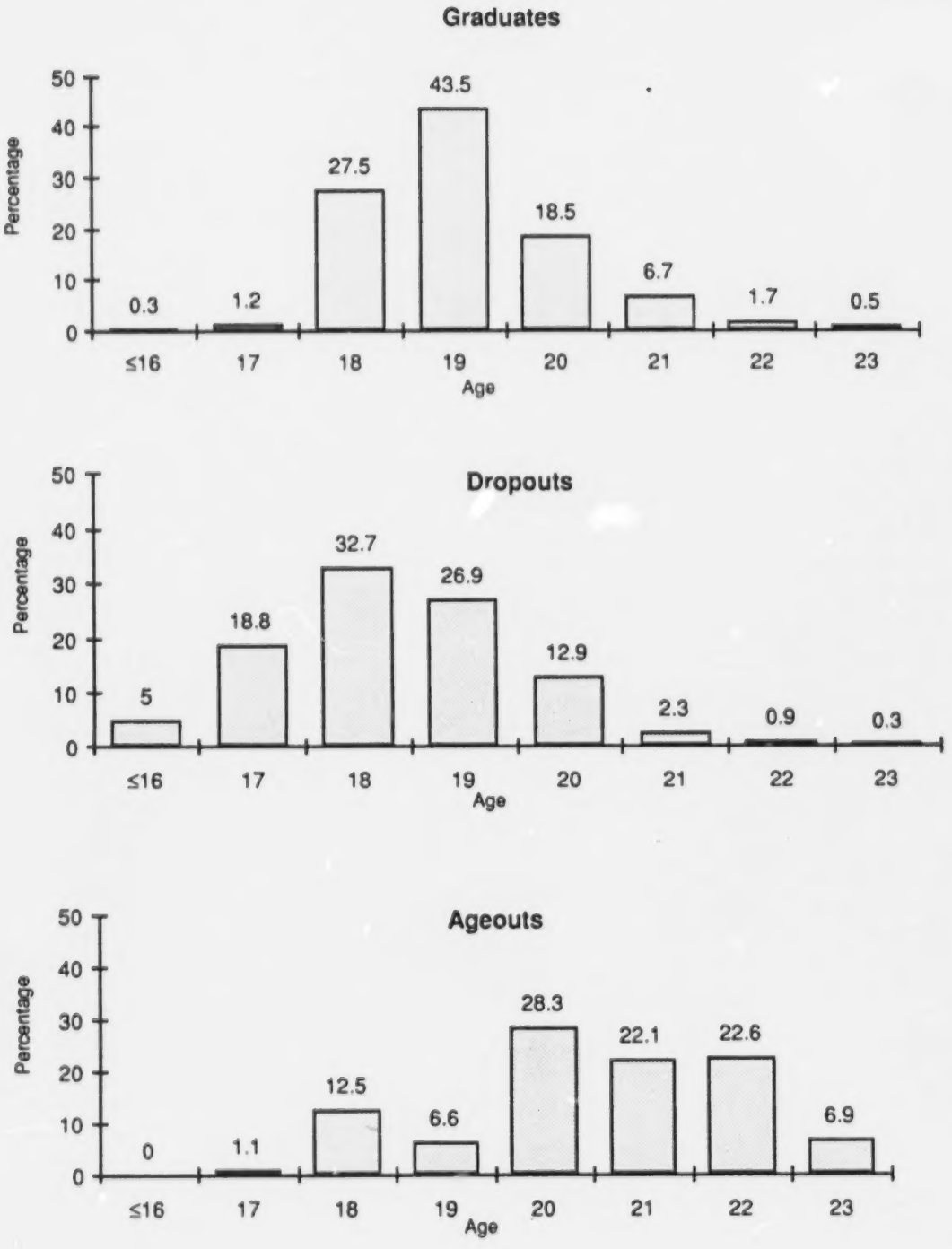


Figure 3-5 AGE AT EXIT BY MODE OF SCHOOL LEAVING

the year in which they left school). Many of the students classified as ageouts were identified as such by their parents during telephone interviews. It is possible that parents interpreted aging out as being too old to want to go to school rather than being too old to legally attend school. Some of the students that were reported to be ageouts may actually have been dropouts. The average age for ageouts was 20.5 years.

NLTS findings regarding age at exit differ from those reported by the U.S. Department of Education for students in special education who exit from high school (U.S. Department of Education, 1992). Government data suggest that students exit at younger ages: for example, 43% of the graduates are 18 years old at exit, and only 18% of the dropouts are still in school at 19 according to the data reported to the federal government by states. One possible explanation for this difference is that many states may be inferring age on the basis of grade level. As we have seen, students with disabilities tend to be older than their classmates, so that such an approach would underestimate their true age. Interestingly, the Department of Education data also show some students (23%) aging out before age 21.

Graduates of different disabilities differed little in average age at exit. The same was true for dropouts. Graduating at an average age of 18.7 to 18.9, students with serious emotional disturbances, speech impairments, visual impairments, or other health impairments were among the youngest graduates. Students with multiple impairments, at 20 years old on the average when they graduated, were the oldest. Dropouts ranged in average age from 18.1 (students with serious emotional disturbances, other health impairments, or multiple impairments) to 18.5 (students with learning disabilities or speech impairments).

Coursework in High School

Educational reform in the 1980s focused on the number and types of courses students were taking. Concerns about coursework resulted in a flurry of new graduation requirements in many states. The inherent limitations of focusing on what students take rather than what they know also have been readily acknowledged.

> Courses reflect an administrative accounting device, not a standard of learning or educational achievement. Requirements are described by educators in terms of content (e.g., Bennett's James Madison Curriculum, and the National Commission on Excellence's recommendations are described in terms of skills that graduates should acquire in English, mathematics, science, social studies, and computer science). (Kolstad and Thorne, 1989)

Adjusting course requirements has historically been the strategy for fine-tuning students' achievement because it is easier to monitor what students take than what they know.

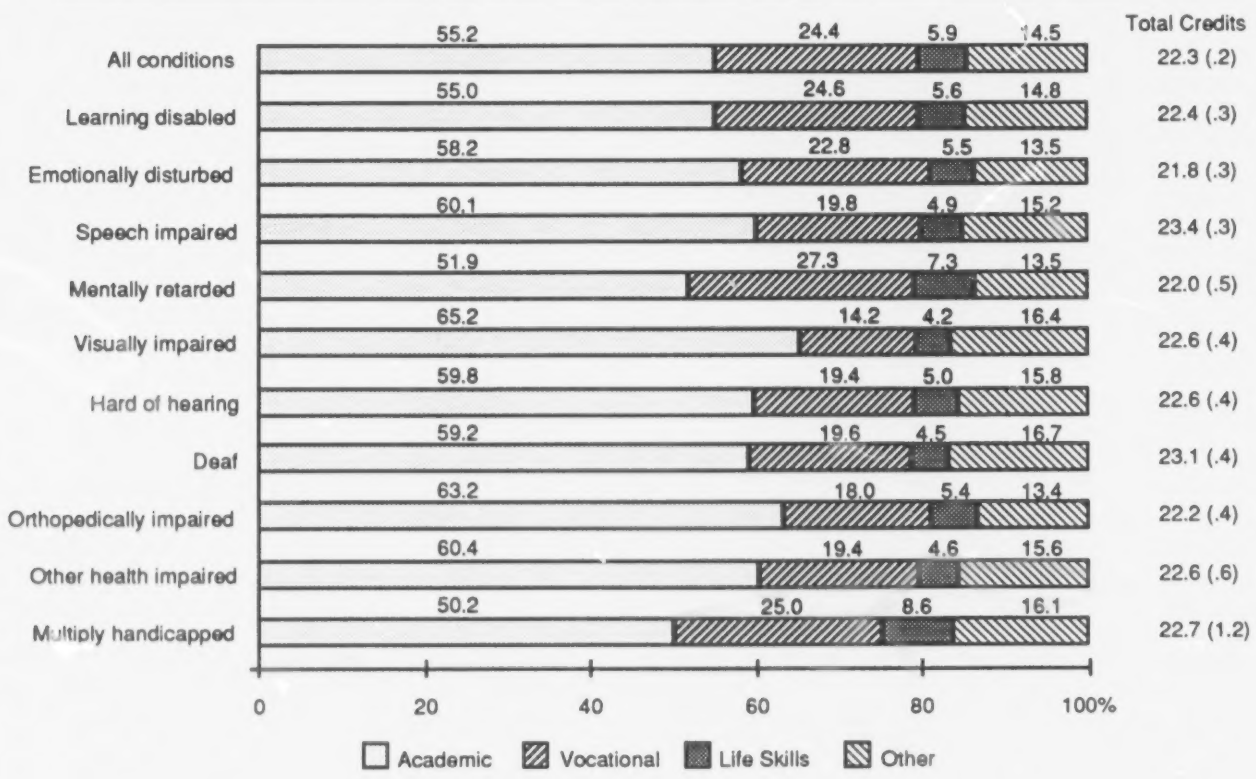
Course requirements generally are communicated as the number of credits required in particular subject areas and as a whole. Credit requirements for graduation are established by individual states and vary from state to state and even somewhat within some states. Illinois,

for example, requires 16 credits to graduate; Minnesota requires 20; and New Mexico requires 23. Likewise, the number of academic credits required varies. Different states require 3 or 4 credits in English; 1 to 4 credits in social studies; 1 to 3 credits in mathematics, and 1 to 3 credits in science (Education Commission of the States, 1983).

Total Credits Earned

Because graduates and dropouts attended school for different lengths of time and, therefore, had different opportunities to earn credits, we report findings about credits earned for graduates and dropouts separately. Ageouts often did not earn credits and are not included here.

Graduates. Figure 3-6 shows the average credits earned by graduates with disabilities, as well as data on the types of credits earned. Students with disabilities who graduated from high school earned an average of 22.3 credits. Graduates earned roughly the same number of credits at each of the first three grade levels, approximately 5.5, with an average of 5.2 credits


Total Credits
All conditions 55.2 24.4 5.9 14.5 22.3 (.2)
Learning disabled 55.0 24.6 5.6 14.8 22.4 (.3)
Emotionally disturbed 58.2 22.8 5.5 13.5 21.8 (.3)
Speech impaired 60.1 19.8 4.9 15.2 23.4 (.3)
Mentally retarded 51.9 27.3 7.3 13.5 22.0 (.5)
Visually impaired 65.2 14.2 4.2 16.4 22.6 (.4)
Hard of hearing 59.8 19.4 5.0 15.8 22.6 (.4)
Deaf 59.2 19.6 4.5 16.7 23.1 (.4)
Orthopedically impaired 63.2 18.0 5.4 13.4 22.2 (.4)
Other health impaired 60.4 19.4 4.6 15.6 22.6 (.6)
Multiply handicapped 50.2 25.0 8.6 16.1 22.7 (1.2)
0 20 40 60 80 100%
Academic
Vocational
Life Skills
Other

Standard errors are in parentheses.

Base: Graduates with complete transcripts. N for all conditions=2,108.

FIGURE 3-6 TYPES OF CREDITS EARNED BY GRADUATES WITH DISABILITIES

earned in 12th grade. Studies of transcripts for students in the general population have consistently found the total number of credits earned to be in the low 20s. High School and Beyond, conducted in 1982, found that students earned an average of 21.2 credits (Kolstad and Thorne, 1989). The 1987 National High School Transcript Study (NHSTS) found an average of 23 credits, indicating that students were earning slightly more credits by the end of the decade (Kolstad and Thorne, 1989). The 1987 NHSTS also included a sample of nearly 7,000 students with disabilities, and found that they earned an average of 19 credits (Hayward and Thorne, 1990).* This is more than 3 credits less than the 22.3 found by the NLTS for students with disabilities. The NLTS data were collected a few years later than the data for the NHSTS, so we might be observing a continuing trend toward earning more credits. However, differences in the student samples are a more likely explanation. The NHSTS included 4 years of data for graduates, whereas the NLTS includes data for the student's entire secondary school program. We have demonstrated that some students remain in secondary school for more than 4 years, giving them the opportunity to earn additional credits that would be reflected in NLTS figures but not in those of the NHSTS.

The total number of credits earned by graduates varied only slightly between disability groups. Students with speech impairments earned the most credits, with an average of 23.4. Students with serious emotional disturbances earned the fewest, with 21.8. This narrow range in average credits earned is to be expected because these data are for graduates who received transcripts. In all likelihood, these students fell under graduation requirements that set a minimum standard. There were no differences in total credits earned by males and females. African American students had fewer total credits, 20.7, compared with 22.8 for white students and 22.4 for Hispanic students ($p<.01$ compared with white students). Students from families with incomes over $25,000 earned 23.1 credits, compared with 21.1 and 21.9 for students from families with incomes of less than $12,000 and $12,000 to $25,000, respectively ($p<.01$ comparing more than $25,000 per year with less than $12,000).

Dropouts. Not surprisingly, students with disabilities who dropped out of school earned substantially fewer credits than students who graduated. Dropouts earned an average of 9.5 credits over their stay in secondary school. As previous NLTS reports have noted, dropouts often fail courses before they finally drop out of school (Wagner, 1991a). Students who dropped out certainly enrolled in more courses than the 9.5 for which they ultimately earned credit.

As can be seen in Table 3-5, there were few significant differences between disability groups. There also were few differences with regard to gender, ethnic background, or family income. The one exception was Hispanic students, who earned an average of only 5.2 credits ($p<.01$ compared with 10.5 for white, non-Hispanic students) before dropping out. The low number of credits earned by students who dropped out, combined with the relatively late age

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* Data reported by Hayward and Thorne (1990) are somewhat inconsistent with the data reported by Kolstad and Thorne (1989) from the same database.

Table 3-5

CREDITS EARNED BY STUDENTS WHO DROPPED OUT

Disability Category	Average Credits	Standard Error	n
All conditions*	9.5	.5	505
Learning disabled	10.1	.7	117
Emotionally disturbed	8.5	.9	104
Speech impaired	8.4	1.3	44
Mentally retarded	8.0	.9	80
Visually impaired	9.4	1.4	28
Hard of hearing	9.8	1.4	38
Deaf	12.9	1.4	22
Orthopedically impaired	11.5	1.8	26
Other health impaired	9.5	1.5	40

* "All conditions" includes youth in each of the 11 federal special education disability categories. Percentages are reported separately only for categories with at least 25 dropouts.

Note: Based on all dropouts with complete transcript data for time in school.

at which they exited school, means that many dropouts left school with very little to show for the many years they spent there. Robert Frost is reported to have said that "Education is ... hanging around until you've caught on" (quoted in Sizer, 1992). These young people hung around for quite a while but were credited for catching on to very little.

Types of Credits Earned

Requirements for graduation stipulate the types of credits needed as well as the total number. Amidst reform discussions focused on increasing the number of academic requirements, the special education community engaged in extensive discussions about the relative importance of academic and vocational coursework for students with disabilities. (Edgar, 1987). Concerns also have been raised as to whether students with disabilities had been given sufficient access to the vocational courses they needed.

The NLTS looked at the percentage of credits that students with disabilities earned in academic courses, vocational courses, life skills courses, or other areas as an indicator of the relative emphases on these types of courses. Academic courses included English, mathematics, social science, science, and foreign language courses. Vocational courses included general career and employment preparation courses, as well as more specific instruction in occupational areas such as business, industrial arts, construction, or mechanics.

Life skills courses included courses in health, home economics, family and interpersonal relations, and food and nutrition.

Overall, students with disabilities who graduated earned an average of 12.3 credits in academic classes, or 55% of their total credits. They earned 5.4 credits in vocational courses, or 24% of their total. Life skills courses constituted 1.3 credits, which was 6% of the total. The remaining 14% was distributed among other courses. Chapter 4 will present a more in-depth look at academic course-taking. Chapter 5 will do the same for vocational courses.

These data are shown in Table 3-6, along with findings from two databases for secondary school students in the general population. These data support the conclusion that students with disabilities took a higher proportion of their credits in vocational classes and a smaller proportion in academic classes than did secondary students in general. High School and Beyond found that 60% of credits earned by students in the general population were in academic courses. The NHSTS, in its comparison of students with and without disabilities, found that students with disabilities earned 57% of their courses in academic areas, compared with 69% for their peers without disabilities. The pattern was reversed for vocational classes: students with disabilities earned 27% of their credits in vocational classes, compared with 18% for students without disabilities. Despite some numerical differences, all available data support the conclusion that students with disabilities as a whole took fewer academic and more

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Table 3-6

FINDINGS FROM NATIONAL STUDIES ON TYPES OF CREDITS EARNED

Study	Total Credits Earned	Percentage of Total Credits That Were: Academic	Vocational	Life Skills	Other
National Longitudinal Transition Study					
Students with disabilities *	22.3	55.2	24.4	5.9	14.5
n = 2,108	(.2)	(.6)	(.6)	(.3)	(.5)
High School and Beyond—1982 †					
General population	21.2	60.2	18.7	--	21.1
n = 11,770					
National Transcript Study—1987					
General population †	23.0	64.3	15.9	--	19.8
n = 22,732					
Students with disabilities ‡	19.0	57.1	27.4	--	15.5
n = 7,000					
Students without disabilities ‡	22.0	69.3	18.4	--	12.3

Standard errors are in parentheses.

* Based on graduates with complete transcripts.

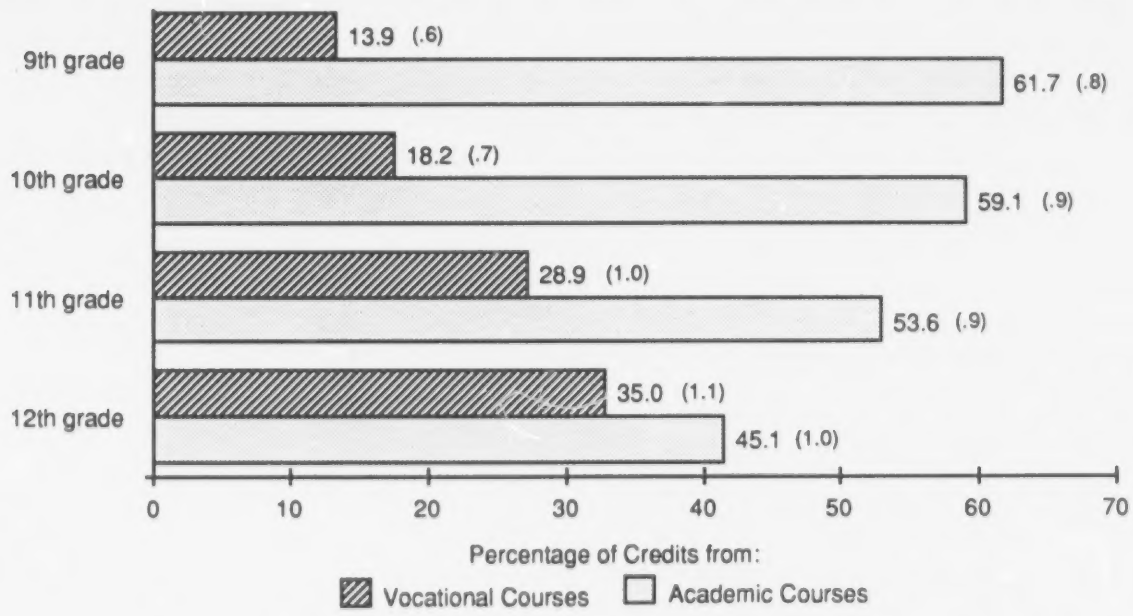
† Source: Kolstad and Thorne (1989).

‡ Source: Hayward and Thorne (1990).

vocational courses than their nondisabled peers. These data also demonstrate that access to vocational courses, at least in general, was no longer an issue for students with disabilities.

The relative proportions of classes in academic, vocational, life skills, and other courses for graduates with different disabilities are shown in Figure 3-6. With the exception of students with multiple disabilities, students in all disability groups earned about 80% of their total credits in some combination of academic and vocational courses. Students with visual impairments earned the highest proportion of credits in academic courses (65%) of any of the disability groups and the lowest proportion in vocational courses (14%). At the other end of the scale were students with mental retardation, who earned 53% of their credits in academic courses and the highest proportion in vocational classes (27%), and students with multiple disabilities (50% academic credits and 25% vocational credits). These students also earned the highest proportion of life skills credits, 9%.

The distribution of types of courses shifted as students with disabilities progressed through school. The percentage of academic courses decreased with each grade level while the proportion of vocational credits increased (see Figure 3-7). Whereas students who became graduates took 62% of their courses in academic subjects in grade 9, they took only 45% in grade 12.



Standard errors are in parentheses.

Base: Graduates with complete transcripts, N=2,091.

FIGURE 3-7 TYPE OF CREDITS EARNED BY GRADUATES AT EACH GRADE LEVEL

Dropouts had roughly the same proportion of academic credits as graduates (53%, compared with 55% for graduates). However, they had a significantly smaller proportion of their credits in vocational courses. Dropouts had only 18% of their credits from vocational classes, whereas graduates had 24% ($p<.001$). This difference is consistent with the grade-level progression into more vocational classes for graduates noted earlier. Many students who eventually dropped out were enrolled only long enough to have experienced the beginning portion of the high school program.

Student Placement

A critical defining feature of a high school course for students with disabilities is whether the course is a regular or special education class. Because the day in high school is partitioned into roughly six or seven time blocks, a student with disabilities can potentially spend none, some, or all of those time blocks in special education courses. Time not spent in special education courses is spent in courses with the other students in the school, those without disabilities. In addition to being an important defining characteristic of the high school experience for the individual student with a disability, the amount of time a student spends in regular education courses is an issue of considerable importance to policymakers, program planners, advocates, and parents, who have been engaged in ongoing discussions about where students with disabilities should be educated. The regular education initiative (REI) has engendered a debate on the settings best suited to meet the needs of students with mild disabilities (Reynolds, Wang, and Walberg, 1987; Schumacher and Deschler, 1988). Advocates for full inclusion of students with disabilities in regular education have emphasized the rights of students with disabilities to be educated in regular classrooms alongside their nondisabled peers (Sailor, 1991).

Interpretations of the findings on time in regular education in this and other sections of the report are based on the assumption that there is no "right" amount of time in special or regular education. Programs for special education students are required by law to be individually determined, with students placed in the least restrictive environment appropriate to their needs. The difficulty inherent in inferring meaning from aggregated statistics on individualized programs becomes particularly apparent with regard to time in regular and special education classes. An IEP team may find three-quarters of a day spent in special education classes to be entirely appropriate for some students with disabilities and totally inappropriate for others. As we have repeatedly seen through numerous previous NLTS analyses, there is tremendous variability within the population of students in secondary special education programs. Interpreting data on class placement is made even more complex by the difference of opinion within the special education community as to what constitutes an appropriate placement, even for students with similar disabilities. Data from the NLTS reported here speak to the question of where students with disabilities were educated; how well they did in those settings is considered in Blackorby, Wagner, and Hebbeler, 1993. The appropriateness or inappropriateness of these placement patterns is much more difficult to determine.

As a context for a discussion of placement, it also is important to note that, although all NLTS students were in special education in 1985 when they were selected for the study, not all students remained in special education throughout high school. Other NLTS findings (Wagner, 1991b) revealed that 5% of students had been declassified from special education in their most recent year in secondary school. Declassification rates in a single year ranged from 19% of students with speech impairments to fewer than 1% of students classified as deaf or multiply handicapped. Declassified students would no longer be eligible for special education classes or support services, but are still included in the sample.

Students with disabilities spent an average of 70% of their time in secondary school in regular education classes. There was no variation across grade levels, with 9th-graders spending 68% of their time in regular education and 12th-graders spending 71%. The average time varied greatly, however, for students with different disabilities. As shown in Table 3-7, students with visual impairments and students with speech impairments spent the most time in regular education, 87% and 86%, respectively. The lowest amount of time in regular education was for students with multiple impairments, who spent an average of 32% of their time there.

Substantial differences in the amount of time in regular education were found even for students with the same disability classification. Twenty percent of students with learning disabilities spent all of their class time in regular education courses; nearly the same percentage spent 50% or less. Nearly 14% of students with mental retardation spent more than three-quarters of their day in regular education. On the other hand, nearly 30% spent one-quarter or less.

Substantial percentages of students with visual impairments and students with speech impairments spent all of their time in high school in regular education classes. Half of the students with visual impairments and almost two-thirds of the students with speech impairments were never enrolled in a special education class throughout high school. Special education for students with either of these disabilities may well have taken the form of services provided outside the classroom, to those students in their regular classrooms, or to their regular education teachers. Students with speech impairments also left special education at a higher rate than other students with disabilities. More than one-fourth of students with other health impairments (38%), hearing impairments (34%), emotional disturbances (32%), and orthopedic impairments (26%) also took no special education classes during secondary school.

The data in Table 3-7 also show that sizable percentages of students with some disabilities spent very little time in regular education classrooms. Most notably, 55% of students with multiple impairments spent one-quarter or less of their time in regular education classes. Relatively large percentages of students with mental retardation (28%) and students with deafness (21%) also spent a quarter or less of their high school classes in regular education. One explanation for the different levels of participation in regular education is the widely divergent skill levels of students with disabilities. One dimension of student functioning was assessed in the 1990 parent interview, when parents were asked to rate how well their young

Table 3-7

TIME IN REGULAR EDUCATION COURSES DURING HIGH SCHOOL

Disability Category	Average Percent of Time	Percentage of Students Whose Proportion of Time in Regular Education Was: 0%	1-25%	26-50%	51-75%	76-99%	100%	n
All conditions*	69.6 (1.3)	3.4 (.8)	6.8 (1.1)	16.3 (1.6)	21.3 (1.8)	31.0 (2.1)	21.3 (1.8)	2,191
Learning disabled	74.6 (1.6)	2.0 (.9)	3.3 (1.2)	13.4 (2.2)	22.1 (2.7)	39.0 (3.1)	20.2 (2.6)	399
Emotionally disturbed	74.3 (2.9)	4.2 (2.0)	5.0 (2.2)	10.4 (3.0)	20.3 (4.0)	28.1 (4.5)	32.0 (4.7)	167
Speech impaired	85.9 (2.2)	.5 (.6)	3.5 (1.6)	9.1 (2.5)	8.4 (2.4)	15.3 (3.2)	63.2 (4.2)	215
Mentally retarded	44.4 (2.2)	8.2 (2.2)	19.6 (3.2)	33.7 (3.8)	24.8 (3.4)	7.7 (2.1)	6.1 (1.9)	263
Visually impaired	86.8 (2.0)	1.9 (1.2)	1.7 (1.2)	5.9 (2.1)	8.7 (2.5)	31.0 (4.1)	50.9 (4.4)	215
Hard of hearing	75.3 (2.1)	3.1 (1.3)	6.6 (1.8)	11.3 (2.3)	16.0 (2.7)	28.6 (3.3)	34.5 (3.4)	322
Deaf	57.4 (3.2)	6.8 (2.6)	14.2 (3.6)	18.9 (4.0)	25.5 (4.5)	24.6 (4.4)	10.1 (3.1)	159
Orthopedically impaired	68.8 (2.9)	3.8 (1.6)	14.7 (3.0)	10.5 (2.6)	13.7 (2.9)	30.8 (3.9)	26.4 (3.7)	240
Other health impaired	75.4 (3.4)	2.5 (1.7)	12.3 (3.6)	7.9 (3.0)	12.1 (3.6)	27.5 (4.9)	37.7 (5.4)	137
Multiply handicapped	31.7 (5.2)	24.3 (6.9)	30.3 (7.4)	17.8 (6.1)	14.7 (5.7)	6.5 (4.0)	6.4 (3.9)	70

Standard errors are in parentheses.

* "All conditions" includes youth in each of the 11 federal special education disability categories. Percentages are reported separately only for categories with at least 25 students.

Note: Based on all students with complete transcript data.

adult children with disabilities could perform four activities on their own on a 4-point scale (from "very well" to "not at all well"). If a youth had not done an activity, parents were asked to rate how well the youth could do the activity if he/she had the chance. The four activities were: going to a library or community swimming pool, using public transportation to get around town, buying his/her own clothes at a store, and arranging a plane or train trip to go out of town. Youth with disabilities as a group were reported to be fairly competent to perform the first three activities. Three-fourths were rated by parents as performing these activities "very well," with almost 9 out of 10 performing these activities at least "pretty well." Youth were seen as having the most difficulty with arranging a plane or train trip, with only half reported to perform this activity "very well" and 16% to perform it "not at all well." This last activity is a much less common one in the lives of young adults. Lower ratings might be due to the level of difficulty

of this activity, to the youths' unfamiliarity with it, or to parents' uncertainty about youths' performance of an activity they had never seen them do.

To obtain a summary measure of community living skills, we added the four task ratings to form a scale that ranges from 4 to 16. Youths' community living skills were considered high with a scale score of 16 (performed all four tasks "very well"). Youth were rated as having medium/high ability with a score of 12 to 15. Youth with scores of 7 to 11 were considered to have low/medium ability, and ratings of 4 to 6 earned a low score on the scale.

The extent of participation in regular education was directly related to the student's ability to function independently in the community, with students who were rated most highly spending the largest amount of time in regular education. Students rated as most independent by their parents spent 79% of their time in secondary school in regular education courses. Those perceived to be least independent spent an average of 39%.

This pattern of the most functionally independent youth spending the most time in regular education held for all disability groups, but the average time varied across disabilities. Youth with visual impairments who received the maximum score on the scale averaged 95% of their time in secondary school in regular education classes. Youth with deafness who received the maximum score averaged 68%. The comparable figures for high-functioning youth with mental retardation and multiple impairments were 56% and 57%, respectively. It appears that decisions about how much time youth with disabilities spent in regular education classes were based on other factors in addition to the functional skills assessed in the parent interview.

Male and female students spent the same amount of time in regular education courses. African American students spent the least time in regular education, with an average of 64% compared with whites (73%, $p<.05$). Hispanic youth averaged 66% time in regular education.

There was a direct relationship between family income and time spent in regular education courses during high school, with students from higher-income families spending substantially more time in regular education courses. Students from families making less than $12,000 per year averaged 63% time in regular education, compared with 68% for students with family incomes of $12,000 to $25,000 and 75% for students from families making more than $25,000 per year ($p<.01$ comparing highest and lowest income categories). The relationship between family income and time in regular education suggests several explanatory hypotheses. Higher-income families have traditionally been more vocal advocates for their children. These parents may have been more actively involved in getting their children in more regular education classes, getting them out of special education altogether, or both. Students from higher-income families also may have attended schools that encouraged greater participation in regular education courses by students with disabilities.

Summary and Conclusions

This chapter has examined some of the overarching features of the secondary school experience for students with disabilities. Findings presented in this chapter show that:

- Most students with disabilities, 92%, attended regular high schools, although this varied for students with different disabilities. The students least well represented in regular high schools were students with deaf-blindness, deafness, multiple impairments, or visual impairments.
- Most students with disabilities in regular high schools were assigned to a grade level and received transcripts—95% and 98%, respectively. The groups least likely to have either a grade level assignment or receive a transcript were students with mental retardation or multiple impairments, but more than two-thirds of even these students proceeded through high school with these common features.
- Nearly one-fourth of graduates with disabilities had supplemented the standard eight-semester program with an extra semester or summer school attendance. The groups most likely to have supplemented their program were students with other health impairments (50%), visual impairments (40%), or hearing impairements (39%).
- Fewer than 5% of students with disabilities who stopped attending secondary school ever returned to earn a diploma, either at their secondary school or through a GED.
- Students with disabilities were relatively old when they graduated, with an average age of 19.1 years. Students who dropped out did so at an average age when nondisabled students were graduating, 18.4 years. Students who aged out left at an average age of 20.5 years.
- Graduates with disabilities earned an average of 22.3 credits, compared with 9.5 earned by students who dropped out. For graduates, 55% of credits were in academic classes and 24% in vocational courses. Dropouts had a similar percentage of academic credits (53%) but a smaller percentage of vocational credits (18%). Students took a larger proportion of their coursework in vocational classes as they progressed through school, and the students who dropped out did so before they reached the upper grade levels.
- Overall, students with disabilities spent the majority of their time in secondary school in regular education classes. Time in regular education varied considerably both across and within disability groups. Students with visual impairments averaged 87% of their time in regular education courses. Students with mental retardation or multiple impairments averaged 44% and 32%, respectively. One-fifth of students with learning disabilities spent all their time in regular education classes; a similar proportion spent 50% or less of their time there.

For students with disabilities, several features of the secondary school experience are similar to the experiences of students without disabilities. Most attended regular high school, were assigned to a grade level, and had their program recorded on a transcript. Those who graduated earned roughly the same number of credits as their nondisabled peers, although they were more likely to be in vocational courses. There are several indications that students

with disabilities may have had to work a bit harder to graduate. Some attended an extra semester or summer school. They were older, on the average, than the typical age for graduation, suggesting that many had attended an extra year of school somewhere in their educational careers.

The findings suggest that students with disabilities who eventually dropped out of school also spent a lot of time in school, although they ended up with few credits on their transcripts to show for their time. They dropped out, on average, at the age when most students graduated, but they had earned fewer than half the credits needed for graduation. At this point, students may indeed have felt "pushed out" as they looked at how old they were and how much they had yet to accomplish to earn a diploma. Although special education students are allowed by law to remain in school until they reach age 21, few did.

Two themes emerge from the findings on regular education. The first is that many students with disabilities spent substantial portions of their time in high school in regular education classes. Discussions about improving outcomes for special education students will need to consider that regular education courses play a large role in the overall secondary program for many students with disabilities. Reforms that focus on the content or delivery of special education classes are likely to be of limited impact when students with disabilities are spending an average of 70% of their class time in secondary school with regular education teachers.

The second theme that emerges is the great variability that exists in the amount of time students with disabilities spend in regular education. Student capabilities are responsible for some of this variability, but even students with the same disability classification and the same functional skill ratings spent quite different amounts of time in regular education. Concepts of what constitutes an appropriate mix of regular and special education appear to vary, and not just in response to student needs. Philosophy on inclusion is likely to play a role. Other research has shown that region of the country also works its way into the decisionmaking process (Wagner, 1991b; Danielson and Bellamy, 1989). The relationship reported here between higher family income and more time in regular education suggests that either family or school resources may also be influencing placement decisions. The impact of these differences in the mix of special and regular education will be examined more thoroughly in a future NLTS report, which will examine student performance in secondary school. The remainder of this report will present a more in-depth look at the nature of the high school program for students with disabilities.

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4 ACADEMIC COURSE-TAKING

by Lynn Newman

Public education in this country originated with the goal of preparing Americans for the responsibilities of citizenship. It was almost universally believed that "a self-governing people needed universal education" (Cremin, 1980). Schools were seen as the means to ensure the literacy and common core of knowledge necessary for appropriate and reasoned political choices (Lazerson, McLaughlin, McPhersen, and Bailey, 1985). These objectives were formalized in 1893 by the Committee of Ten of the National Education Association (several members of this committee later founded the College Entrance Examination Board in 1903; Hample, 1986). This committee devised a high school course of study with five "main lines": English, mathematics, science, history, and foreign language. They proposed that these subjects be taught "seriatim" (in a series), with classes of slightly less than an hour each day (Hample, 1986).

Whereas specific course content has changed over the years (Goodlad, 1986), this framework for high school academic coursework has changed very little. When transcripts of students in regular education programs were examined recently, they showed the bulk of students' coursework to be academic courses: English, social studies, science, and mathematics (Boyer, 1983).

Although academic courses account for most coursework of students in regular education, course-taking experiences of students in special education might differ. Because students in special education, by definition, have additional educational needs that might be better answered by life skills or vocational coursework, they may not spend as much of their day focusing on academic subjects. In addition, academic course-taking requirements are strongly linked to college entrance requirements (Hample, 1986), yet only 14% of secondary students in special education attended postsecondary schools during their first 2 years after high school (Marder, 1992), perhaps reflecting less emphasis on academic courses in secondary school. Countering this push toward spending less time in academic subjects for students in special education is the emphasis placed on academic subjects by high schools in response to recent education reforms focusing on increased evaluations and strengthened graduation requirements.

This chapter examines the academic course-taking experiences of students with disabilities who attended regular secondary schools. Academic courses here include coursework in English, social studies, mathematics, science, and foreign language, as well as the courses that support these academic classes, such as study skills courses. We begin by focusing on

overall academic course enrollment of students at each grade level, followed by a discussion of the experiences of 9th- through 12th-graders in each of the academic content areas. The chapter then focuses on the special education/regular education placement of academic courses. This is followed by a discussion of the academic experiences of students who were not assigned to a grade level. The chapter closes with a discussion of the experiences of a subset of students for whom we have additional information, provided by their teachers, about their 12th-grade academic courses.

Academic Course Enrollment

Virtually all students with disabilities took at least one academic course during each of their 4 years in high school, although slightly fewer students took an academic course in 12th grade than in 9th grade (97% vs. 99%, $p<.001$). This is the inverse of their experience with vocational courses; more students took vocational courses in 12th grade than in 9th grade (see Chapter 5). In the extended 12th grade, although these students' programs showed a strong vocational focus, more than 90% were also enrolled in at least one academic course.

Although most students with disabilities were exposed to at least one academic course each year in high school, the academic courses they took varied in several dimensions, including placement (special vs. regular education), content (e.g., English, math), and level (remedial vs. content). These differences strongly influenced student experiences in these academic classes. Academic course placement and course content were two dimensions that we were able to code during the transcript coding process. Differences in experiences related to these two aspects of academic courses are described later in this chapter. However, we were not as consistently able to differentiate during transcript coding between remedial skills courses, such as basic reading, writing, and computation classes, and content area courses, such as social studies and science. Thus, our general definition of academic classes results in a higher academic class participation rate than found by others who have differentiated between remedial and content classes. For example, the University of Oregon Follow-Along Project found that for students with disabilities in their last year of high school, approximately 70% had participated in remedial instruction, and a similar proportion had participated in content area instruction (Halpern, 1993).

Overall academic course enrollment varied very little by disability category, although youth with multiple handicaps were consistently less likely to have been enrolled in an academic course than their peers (98% took an academic course at some point, varying from 97% in 9th grade to 86% in 12th grade). Again, if we had been able to differentiate confidently between remedial and content classes, there probably would have been greater variability in academic course-taking between students in different disability categories. For example, the University of Oregon Follow-Along Project found that for students with disabilities in their last year of high school, participation in remedial academics ranged from a low of 41% for students with moderate mental retardation to a high of 80% of students with learning disabilities, while

participation in content area instruction ranged from a low of 3% for students with moderate mental retardation to a high of 88% for students with learning disabilities (Halpern, 1993). These types of classes are combined in our analyses.

There are no differences in academic course-taking related to gender, ethnicity, or socioeconomic status, with 96% to 99% of youth in almost all demographic categories having taken at least one academic course each year in high school.

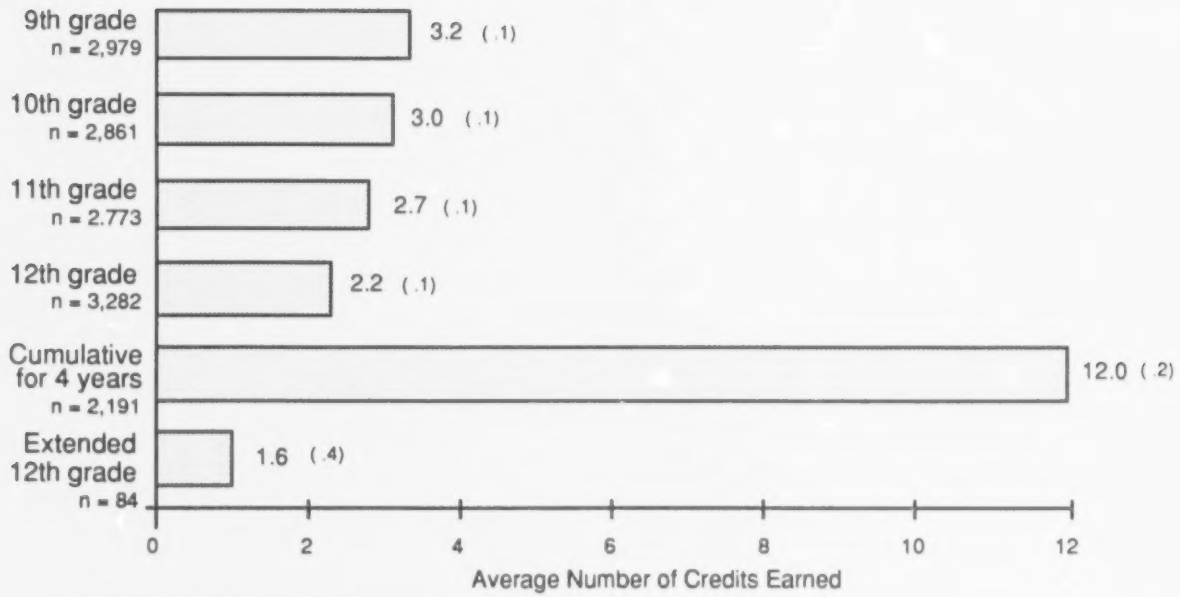
Academic Credits Earned

Although knowledge of whether a student was enrolled in a course of study provides information on exposure to academic courses, it does not provide information on the extent of participation in academic coursework. Credits provide this indicator of quantity or emphasis on academic classes. To standardize the credit information included on students' transcripts, course credits were translated into a standard unit of course credit, the Carnegie unit. The Carnegie unit is approximately equivalent to one class meeting five times a week throughout the school year.

Credits closely mirror enrollment percentages reported thus far in that higher average credits were earned by groups with higher enrollment. However, the number of credits earned also is influenced by other factors. Even among students with similar enrollment percentages, some students might have taken fewer academic courses, spent fewer hours in academic courses, attended courses that did not earn credits, or failed the courses they attended, thereby not receiving credit.

Consistent with our earlier discussion of academic course enrollment, students with disabilities earned fewer academic credits each subsequent year in high school. As presented in Figure 4-1, 9th-grade students earned 3.2 credits in academic courses, compared with 3 credits in 11th grade (n.s.), 2.7 credits in 10th grade ($p<.001$), 2.2 credits in 12th grade ($p<.001$), and 1.6 credits in the extended 12th grade ($p<.001$).

As part of education reform efforts during the 1980s, many states and school districts increased their graduation requirements in English, mathematics, science, and social studies (Blank and Espenshade, 1988). Requirements for high school graduation vary by state, but on the average, states require students to have 11 or 12 credits in the academic subjects: English, social studies, mathematics, and science (Education Commission of the States, 1992).



Standard errors are in parentheses.

FIGURE 4-1 CREDITS EARNED IN ACADEMIC COURSES, BY GRADE LEVEL

Students with disabilities who completed 4 grades of high school appeared to meet these state graduation requirements for academic subjects. By the time they left school, students who had been in high school for 4 grades had accumulated 12 credits in academic subjects. NLTS findings are similar to data reported by the National High School Transcript Study (NHSTS), which reported that students with disabilities earned 11 credits over 4 years of high school (Hayward and Thorne, 1990).* Students with disabilities earned fewer academic credits than their nondisabled peers, who were reported by the NHSTS to have accumulated 15 academic credits by the end of 12th grade (Hayward and Thorne, 1990).

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* NLTS collected data on courses taken during grades 9 through 12. Some NLTS students took longer than 4 years to complete these grades. In comparison, NHSTS collected information on 4 years of student course-taking; therefore students had a shorter time span to accumulate credits. The 12.3 credits earned by NHSTS graduates with disabilities might be a better comparison to the 12.0 credits earned by NLTS students.

Disability and Demographic Variations in Academic Credits Earned

Students in all disability categories showed a consistent decline in academic course-taking across grade levels (Table 4-1). Although almost all students took academic classes, they varied in the number of academic credits they earned. Students with visual impairments earned the most academic credits cumulatively (14.7), followed by those with hearing, speech, or orthopedic impairments (13.5 to 13.9 credits). The students in these disability categories were also significantly more likely to continue on to postsecondary education (Newman and Cameto, 1993). Probably because they had postsecondary education in mind, they tended to surpass the 11 to 12 academic credits required by many states for high school graduation, and instead mirrored more closely the 15 academic credits earned by those without disabilities, as reported by the NHSTS.

Table 4-1

AVERAGE ACADEMIC CREDITS EARNED, BY DISABILITY CATEGORY

Grade Level*	Learning Disabled	Emotionally Disturbed	Speech Impaired	Mentally Retarded	Visually Impaired	Hard of Hearing	Deaf	Orthopedically Impaired	Other Health Impaired	Multiply Handicapped
9th grade	3.2	3.0	3.5	2.9	3.8	3.6	3.8	3.7	3.2	3.1
	(.1)	(.1)	(.1)	(.1)	(.1)	(.1)	(.1)	(.1)	(.1)	(.2)
n	548	299	282	418	265	387	180	306	200	90
10th grade	3.1	2.7	3.5	2.7	3.6	3.5	3.6	3.5	3.1	2.8
	(.1)	(.1)	(.1)	(.1)	(.1)	(.1)	(.1)	(.1)	(.2)	(.2)
n	520	286	261	399	265	377	174	292	189	91
11th grade	2.6	2.7	3.3	2.4	3.8	3.3	3.2	3.4	3.1	2.4
	(.1)	(.1)	(.1)	(.1)	(.1)	(.1)	(.1)	(.1)	(.2)	(.2)
n	532	235	258	375	250	371	180	293	185	87
12th grade	2.2	2.1	2.6	2.1	2.9	2.5	2.6	2.6	2.4	2.0
	(.1)	(.1)	(.1)	(.1)	(.1)	(.1)	(.1)	(.1)	(.1)	(.2)
n	652	278	311	451	294	430	223	344	194	90
Cumulative for 4 grades*	11.9	11.8	13.5	11.2	14.7	13.5	13.5	13.9	12.8	11.3
	(.2)	(.3)	(.3)	(.3)	(.4)	(.3)	(.4)	(.3)	(.5)	(.7)
n	399	167	215	263	215	322	159	240	137	70

Standard errors are in parentheses

* There were too few students in extended 12th grade to disaggregate.

Youth with mental retardation, multiple handicaps, learning disabilities, or emotional disabilities earned the fewest credits (11.2 to 11.9 credits, $p<.001$ compared with other categories).

As discussed earlier, there are several reasons why some students may have received fewer academic credits than others with similar rates of enrollment in academic courses. These reasons appeared to vary by disability category. Of students in the four disability categories earning the fewest credits, students classified as mentally retarded and multiply handicapped spent fewer hours in academic courses than students with other disabilities. For example, in 9th grade, students classified as mentally retarded completed 18 hours of academic coursework, compared with 20 hours completed by those classified as visually impaired ($p<.001$), therefore earning fewer credits. In contrast, students classified as seriously emotionally disturbed spent a similar amount of time in academic courses as most students with disabilities, but were significantly more likely to receive failing grades in their courses than other students (Wagner, 1991).

As presented in Table 4-2, the pattern of students taking fewer academic classes in each successive year in high school was apparent for students with different demographic characteristics. Although this pattern was consistent for students regardless of ethnic background, socioeconomic status, and gender, students' ethnic background and socioeconomic status were related to differences in the cumulative number of academic credits earned, whereas gender did not appear to affect how many academic credits students earned.

Students' ethnic background seemed to be related to academic course-taking only in the early grades. For example, in 9th grade, white students earned significantly more academic credits than Hispanic peers (3.3 credits vs. 2.7 credits; $p<.01$), and in 10th grade, they earned significantly more academic credits than their African American peers (3.2 credits vs. 2.8 credits, $p<.01$). By the 11th and 12th grades, there were no longer significant differences between white students and others in the number of academic credits earned by students that remained in high school until the upper grades.

Students from wealthier families (those earning more than $25,000 per year) consistently earned more academic credits each year in high school than did their peers from less wealthy families. Those from wealthier families earned 12.4 academic credits cumulatively, whereas those from families earning $25,000 or less had accumulated 11.4 academic credits ($p<.01$).

Table 4-2

AVERAGE ACADEMIC CREDITS EARNED, BY DEMOGRAPHIC CHARACTERISTICS

	Gender		Ethnic Background			Household Income		
Youth Characteristics	Male	Female	White	African American	Hispanic	<$12,000	$12,000 - $25,000	>$25,000
9th grade	3.1 (.1)	3.3 (.1)	3.3 (.1)	3.1 (.1)	2.7 (.2)	2.9 (.1)	3.1 (.1)	3.4 (.1)
n	1,821	1,155	1,686	520	305	563	654	1,105
10th grade	3.0 (.1)	3.1 (.1)	3.2 (.1)	2.8 (.1)	3.0 (.2)	2.8 (.1)	3.0 (.1)	3.3 (.1)
n	1,756	1,101	1,625	501	291	531	629	1,077
11th grade	2.6 (.1)	2.8 (.1)	2.7 (.1)	2.5 (.2)	3.0 (.2)	2.5 (.1)	2.6 (.1)	2.8 (.1)
n	1,686	1,081	1,631	448	276	512	618	1,083
12th grade	2.2 (.1)	2.2 (.1)	2.2 (.1)	2.2 (.1)	2.4 (.2)	2.1 (.1)	2.1 (.1)	2.3 (.1)
n	1,977	1,292	1,960	514	290	568	702	1,314
Cumulative for 4 grades*	11.8 (.2)	12.2 (.3)	12.0 (.2)	11.6 (.4)	12.7 (.6)	11.4 (.4)	11.4 (.3)	12.4 (.2)
n	1,319	872	1,337	347	215	390	487	903

Standard errors are in parentheses.

* There were too few students in extended 12th grade to disaggregate.

Academic Content Areas

Enrollment

Enrollment in an academic class was an almost universal experience for students with disabilities in regular high schools. Yet the term "academic" encompassed many different types of classes. Students could have been enrolled in coursework focusing on English, social studies, math, science, or foreign language, as well as courses that support these academic classes, such as study skills courses. What were students' experiences in the various types of academic courses? Were students more likely to be enrolled in some types of academic course than others? Were differences in students' disability category or demographic characteristics related to differences in enrollment in specific types of academic courses? Here we will be examining the course-taking experience of students with disabilities in each of the academic content areas.

Courses listed on students' transcripts were coded into course content areas using a modified version of the Classification of Secondary School Courses coding system developed for the National Center for Education Statistics (NCES) in 1982, and the Special Education Course Classification and Coding System developed for NCES and the National Assessment of Vocational Education. It is important to be aware of the wide range of courses that have been coded into a specific content area, such as English, math, or social studies. For example, courses coded as "math" ranged from those teaching the fundamental skills of arithmetic to courses focusing on algebra, geometry, trigonometry, and calculus. Courses varied not only by the topics covered, but by the level of the material presented, with classes ranging from remedial and functional skills classes to advanced placement classes qualifying for college credit. The learning experiences of two students described as being enrolled in an English course could have been extremely different. A course described here as "English," for a child who had not yet mastered the skills necessary for reading, might have focused on phonics and reading skills. Another child who was a fluent reader and gifted writer might have been enrolled in a medieval literature course focusing on Chaucer, also coded as an English course. It is important to be aware of these variations in the types of courses in an academic content area.

English. The skills imparted in English courses are vital; English courses are seen as the means of imparting reading, writing, listening, and speaking competencies (Boyer, 1983; Graham, 1981). Although most students took an English course, their experiences in those classes varied widely.

The majority of the states require 4 years of English to graduate from high school; English enrollment appeared to reflect this requirement. English was the type of academic class enrolled in most frequently and consistently by students with disabilities. At least 90% of students with disabilities in each high school grade took one or more English courses, with this number reaching 97% in the lower grades (Table 4-3). Almost all students who had completed 12th grade had taken at least one English course during high school. Academic coursework in the extended 12th grade also focused primarily on English (70% enrolled in at least one class).

Mathematics. Mathematics teaches students to think quantitatively and to make "intelligent decisions regarding situations involving measurable quantities" (Boyer, 1983). Mathematics has become increasingly important in many fields, including computer science, science and technology, business, and finance. Students with a strong preparation in math keep open the door to a wide range of career choices (The College Board, 1983).

Similar to English, most students (96%) were enrolled in a math class in 9th grade, but unlike English, this percentage steadily decreased over the 4 years of high school, with fewer than half of all students with disabilities (45%) enrolled in a math class in 12th grade. Most states require only 2 or 3 years of math for graduation. It appears that unless students planned to attend postsecondary education, they stopped taking math classes when they met the requirement.

Table 4-3

ENROLLMENT OF STUDENTS WITH DISABILITIES IN ACADEMIC CONTENT AREA COURSES, BY GRADE LEVEL

Academic Content Area	Grade Level					
	9th Grade	10th Grade	11th Grade	12th Grade	Cumulative for 4 Grades	Extended 12th Grade
Percentage of students enrolled in courses in:						
English	97.1 (0.6)	96.9 (0.7)	95.5 (0.8)	89.7 (1.1)	99.7 (.3)	70.5 (12.4)
Mathematics*	95.5 (0.8)	90.4 (1.1)	67.4 (1.8)	45.3 (1.8)	99.5 (.3)	63.2 (13.1)
Advanced mathematics†	0.5 (0.3)	3.6 (0.7)	4.9 (0.8)	2.9 (0.6)	11.8 (1.4)	--
Social studies	75.1 (1.6)	67.6 (1.8)	86.5 (1.3)	76.2 (1.5)	97.7 (.7)	31.9 (12.6)
Science	78.8 (1.5)	75.9 (1.6)	42.9 (1.9)	28.1 (1.6)	96.5 (.8)	9.5 (8.0)
Foreign language	5.5 (0.8)	5.9 (0.9)	8.1 (1.1)	4.6 (0.7)	17.6 (1.7)	.2 (.2)
Academic support	13.7 (1.3)	15.6 (1.4)	13.8 (1.3)	10.7 (1.1)	30.5 (2.1)	19.5 (10.7)
n	2,979	2,859	2,771	3,273	2,191	84

Standard errors are in parentheses.

* Math includes all math classes, including advanced math.

† Advanced math includes geometry, trigonometry, and calculus.

High school math classes ranged from those teaching the fundamental skills of arithmetic—addition, subtraction, multiplication and division—to courses focusing on algebra, geometry, trigonometry, and calculus. Very few special education students were enrolled in advanced math courses, such as geometry, trigonometry, or calculus; the percentage enrolled in advanced math classes peaked at 5% in 11th grade.

Social studies. Social studies courses are linked by their focus on the complexity of our social environment; they combine the study of history and the social sciences with promoting skills in citizenship (The College Board, 1983). Courses in social studies were even more varied in course title than those included as English or mathematics. Social studies classes focused on history, geography, government, economics, political science, sociology, psychology, anthropology, law, public affairs, and behavioral science.

Fewer students began their high school careers with social studies courses than with math or English courses, but unlike mathematics, social studies enrollment fluctuated but did not decline over the 4 years of high school. Three-quarters of students with disabilities received social studies instruction in the 9th grade; the percentage then declined to 68% in 10th grade, increased to 86% in 11th grade, and returned to 76% in 12th grade.

Science. An understanding of scientific facts and processes, the scientific method, the ability to gather data and consider causal relationships and discover theories, and an awareness of the interdependence of the world have been considered essential components of the core of common learning (Boyer, 1983). Scientific knowledge is often necessary to function effectively as a responsible citizen in a society increasingly shaped by science and technology (The College Board, 1983).

Science courses included general science classes, as well as classes focusing on a wide range of scientific knowledge, including biology, life sciences, physical science, chemistry, physics, geology, and earth sciences.

For most students with disabilities, exposure to science occurred during the earlier secondary school years, with science course enrollment sharply declining in the upper high school grades. More than three-quarters of all 9th-grade students were enrolled in a science class (79%). This percentage remained fairly level for students in the 10th grade (76%), then dropped steeply for 11th-grade students (43%) and again for 12th grade (28%). State requirements for science are similar to math requirements in that only 2 or 3 years of science courses are necessary for high school graduation. Again, student enrollment in science courses reflects these requirements. It appears that unless students planned to attend postsecondary education, they stopped taking science classes when they met graduation requirements.

Foreign language. Knowledge of a foreign language has been thought to foster greater appreciation for cultural diversity (The College Board, 1983). Foreign language knowledge is especially important in our increasingly interdependent world. Yet foreign language study peaked in 1915, when 36% of high school students studied another language (Starr, 1979), and it is not generally required for high school graduation.

Foreign language courses included coursework in a variety of languages, including Spanish, French, German, Japanese, and Russian.

Very few students with disabilities studied a foreign language in high school; between 5% and 8% of students at any grade were enrolled in a foreign language class. Cumulatively, almost 18% of students who remained in high school through 12th grade had taken a foreign language course at some time in their high school careers. This is similar to the experience of students in general. Within the past 10 years, only about 15% of the general high school population have studied another language (Boyer, 1983). Increasing graduation requirements

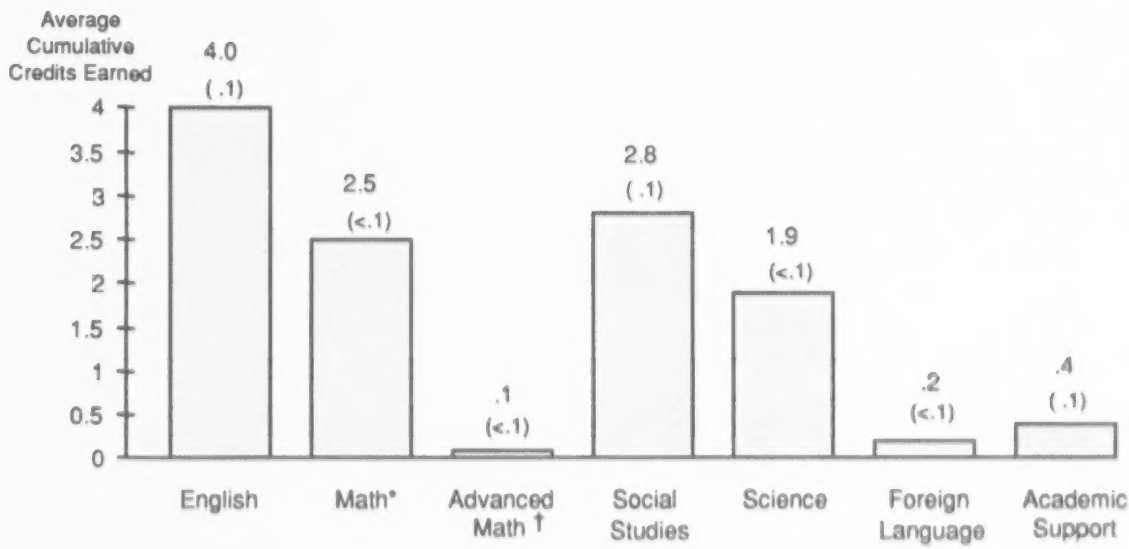
in science, mathematics, or other areas may reduce the ability of students to take electives such as a foreign language.

Academic support. In any one grade, between 11% and 16% of high school students with disabilities were enrolled in classes that supported their academic instruction. These academic support courses included study skills classes, learning labs, tutorials, resource rooms, and test-taking preparation courses.

Cumulative Credits Earned in Academic Content Areas

As indicated in Figure 4-2, the pattern of credits earned in academic content areas followed the pattern of participation in these courses.

Average cumulative credits earned over 4 grade levels by students with disabilities appeared similar to those earned by youth in general. NLTS students earned an average of 4



Standard errors are in parentheses.

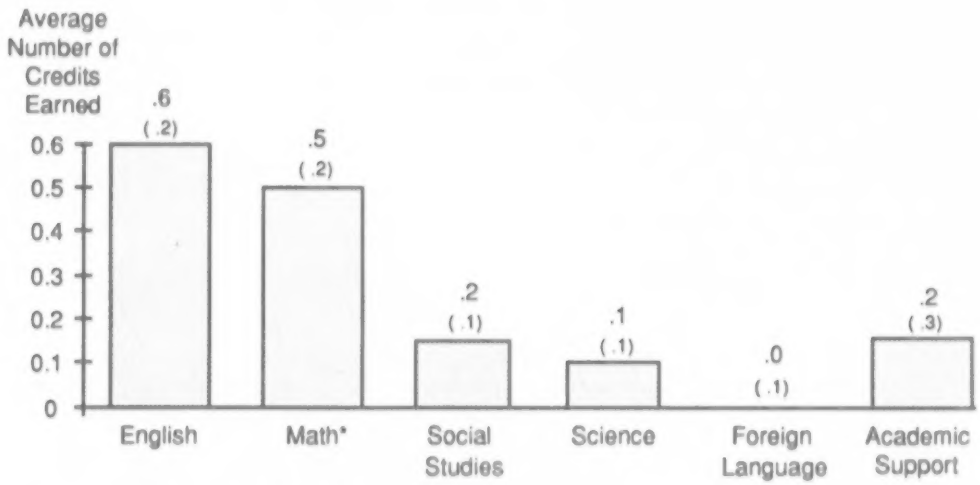
* Math includes all math classes, including advanced math.

† Advanced math includes geometry, trigonometry, and calculus.

n = 2,191

FIGURE 4-2 AVERAGE CUMULATIVE CREDITS EARNED IN ACADEMIC CONTENT COURSES

credits in English, compared with 3.9 credits earned by NHSTS nondisabled students.* Credits accumulated in other subjects included 2.5 in math (compared with 2.9 for the NHSTS nondisabled population); 2.8 in social studies (compared with 3.2 for NHSTS students); 1.9 in science (compared with 2.5 for NHSTS students); and .2 in foreign languages (compared with 1.4) (U.S. Department of Education, 1990). The small group of students who remained in secondary school after completing 12th-grade requirements continued to earn credits in academic content areas, although significantly fewer credits were earned in that year than in earlier years. They earned about a half credit in English and in math, and about a fifth of a credit each in social studies, science, and academic support classes (Figure 4-3).



Standard errors are in parentheses.
* Math includes all math classes, including advanced math. n = 84

FIGURE 4-3 ACADEMIC CONTENT AREA CREDITS EARNED IN THE EXTENDED 12TH GRADE

* These differences in credits earned by youth with disabilities and their nondisabled peers might be slightly larger than presented. As described earlier, NLTS data are reported for 4 grades; some students spent more than 4 years completing the 4 grades. NHSTS reported data for 4 years; therefore, NHSTS youth had less time to accumulate credits if they did not complete high school in 4 years. NHSTS students without disabilities earned 15 academic credits over 4 years, while NHSTS students who had graduated at the end of the 4 years reported earning 16 credits in academic courses.

Variations by Disability and Demographic Characteristics

Most students in each of the disability categories who completed 12th grade took at least one English, social studies, and math course during their high school years (Table 4-4). There were no statistically significant differences in the cumulative percentages enrolled in these

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Table 4-4

ENROLLMENT IN ACADEMIC CONTENT COURSES AND CUMULATIVE CREDITS EARNED, BY DISABILITY CATEGORY

	Learning Disabled	Emotionally Disturbed	Speech Impaired	Mentally Retarded	Visually Impaired	Hard of Hearing	Deaf	Orthopedically Impaired	Other Health Impaired	Multiply Handicapped
Percentage taking:										
English	100.0 (.1)	100.0 (.1)	99.0 (.9)	98.6 (.9)	99.7 (.5)	99.5 (.5)	100.0 (.1)	100.0 (.1)	96.9 (1.9)	98.2 (2.1)
Mathematics*	100.0 (.1)	100.0 (.1)	99.5 (.6)	97.5 (1.2)	99.7 (.5)	99.7 (.4)	100.0 (.1)	99.7 (.5)	96.9 (1.9)	96.0 (3.1)
Advanced math†	10.8 (2.0)	17.4 (3.8)	35.8 (4.2)	.5 (.6)	50.9 (4.4)	33.3 (3.4)	21.9 (4.3)	33.6 (4.0)	28.8 (5.0)	3.2 (2.8)
Social studies	99.0 (.6)	99.5 (.7)	99.5 (.6)	91.3 (2.2)	99.7 (.5)	99.2 (.6)	99.5 (.7)	99.4 (.6)	95.1 (2.4)	87.2 (5.4)
Science	98.2 (.8)	99.0 (1.0)	98.0 (1.2)	88.9 (2.5)	99.0 (.9)	99.5 (.5)	97.6 (1.6)	99.3 (.7)	91.4 (3.1)	85.2 (5.7)
Foreign language	17.2 (2.4)	20.5 (4.0)	43.6 (4.3)	4.7 (1.7)	61.8 (4.3)	28.8 (3.3)	11.6 (3.3)	40.2 (4.1)	47.7 (5.5)	8.1 (4.4)
Academic support	33.7 (3.0)	27.1 (4.4)	14.7 (3.1)	25.3 (3.5)	31.7 (4.1)	29.5 (3.3)	34.4 (4.9)	25.4 (3.7)	26.3 (4.9)	17.2 (6.1)
Average credits earned:										
English	4.0 (.1)	3.9 (.1)	4.4 (.1)	3.9 (.1)	4.2 (.1)	4.4 (.1)	4.9 (.2)	4.4 (.1)	3.9 (.2)	4.3 (.3)
Mathematics*	2.5 (.1)	2.5 (.1)	2.8 (.1)	2.6 (.1)	3.1 (.1)	2.8 (.1)	2.9 (.1)	2.9 (.1)	2.8 (.1)	2.8 (.2)
Advanced math†	.1 (.1)	.2 (.1)	.4 (.1)	0 (.1)	.6 (.1)	.3 (.1)	.2 (.1)	.4 (.1)	.4 (.1)	0 (.1)
Social studies	2.8 (.1)	3.0 (.1)	3.0 (.1)	2.4 (.1)	3.2 (.1)	2.9 (.1)	2.9 (.1)	3.2 (.1)	2.9 (.1)	2.3 (.2)
Science	2.0 (.1)	1.9 (.1)	2.4 (.1)	1.6 (.1)	2.4 (.1)	2.2 (.1)	2.0 (.1)	2.1 (.1)	1.9 (.1)	1.5 (.2)
Foreign language	.1 (.1)	.2 (.1)	.7 (.1)	0 (.1)	1.1 (.1)	.5 (.1)	.1 (.1)	.7 (.1)	.7 (.1)	.1 (.1)
Academic support	.5 (.1)	.3 (.1)	.2 (.1)	.5 (.1)	.6 (.1)	.6 (.1)	.6 (.1)	.5 (.1)	.4 (.2)	.1 (.1)
n	399	167	215	263	215	322	159	240	137	70

Standard errors are in parentheses.

* Mathematics includes all math classes, including advanced math.

† Advanced math includes geometry, trigonometry, and calculus.

three types of academic classes between disability categories, except that students with multiple handicaps were less likely than others to have taken a social studies course (87% of youth with multiple handicaps were enrolled in social studies, compared with 100% of youth with visual impairments, for example, $p<.05$).

Although the level of enrollment in basic academic courses, such as English, math, and social studies, varied very little by disability category, it is important to note that student experiences within these classes varied widely across several dimensions, including whether the class was a regular or special education class and whether the class focused primarily on remedial or foundation skills such as reading, or on content areas such as literature; for example, Partanen and Zigmond (1993) have found that curricula in special education, as compared with regular education, are less rigorous in both amount and depth of information to which students are exposed.

Lieberman (1992, p. 15) has defined *handicap* as "a limitation of choice that prevents a quality of life commensurate with one's personal desires." Differences in enrollment in other types of academic courses, such as advanced math, science, and foreign language, reflect this limitation of choice faced by students with disabilities. Some disabilities can be classified as mental disabilities, having to do primarily with cognition and ideational processes, other disabilities are related primarily to acquiring information (sensory input), movement; and physical responses. Limitations of choice are more severe for youth with mental disabilities—those with mental retardation, learning disabilities and emotional disorders—than for those with sensory, movement, and physical disabilities, especially "when it comes to choices that involve academic pursuits and/or powerful thought processes" (Lieberman, 1992, p. 16). For example, although enrollment in mathematics courses as a whole did not vary by disability category, there were large variations in the percentage of students who took at least one advanced math course (geometry, trigonometry, or calculus). More than half of all students with visual impairments had been enrolled in at least one advanced math course, and approximately one-third of those classified as speech impaired, hard of hearing, deaf, orthopedically impaired, or other health impaired had taken these math classes, whereas only 17% of students with serious emotional disturbances, 11% of those with learning disabilities, 3% of those with multiple disabilities, and fewer than 1% of those classified as mentally retarded had taken an advanced math course.

Enrollment in other types of academic courses also varied by disability category. Almost all (99%) students classified as hard of hearing, seriously emotionally disturbed, visually impaired, or orthopedically impaired had been enrolled in a science course during their high school career, compared with 89% of those classified as mentally retarded ($p<.001$) and 85% of those with multiple handicaps ($p<.05$). Foreign language enrollment also showed a large variation by disability category. More than 60% of those with visual impairments had received foreign language instruction, compared with 48% of those with other health impairments, the next most likely group to have taken a foreign language ($p<.05$). Students classified as learning disabled (17%), deaf (12%), multiply handicapped (9%), or mentally retarded (5%) were the least likely to have ever been enrolled in a foreign language course.

Although most students had taken at least one English, social studies, or mathematics course during high school, regardless of disability category, the number of cumulative credits earned in those classes did vary by disability category. Students classified as visually impaired were among those to receive the most credits in social studies (3.2 credits), math (3.1 credits), advanced math (.6 credits), science (2.4 credits) and foreign language (1.1 credits). Students classified as deaf received the most English credits (4.9 credits), whereas those classified as speech impaired were among those to receive the most science credits (2.4 credits). Those categorized as other health impaired were among those to receive the fewest English credits (3.9 credits), as were those with emotional disabilities. Students with emotional disabilities also received the fewest math credits (2.5 credits), along with those with learning disabilities. Students classified as mentally retarded were among those to receive the fewest English credits (3.9 credits), while students with multiple impairments received the fewest social studies credits (2.3 credits). Students in both of these categories received no advanced math, no, or almost no foreign language credits, and fewer science credits than other students (1.6 credits for those classified as mentally retarded and 1.5 credits for those categorized as multiply impaired).

Courses that exceeded basic high school graduation requirements, such as advanced math or science courses or foreign language courses, were most frequently taken by those who were more likely to continue their education after secondary school, especially those categorized as visually impaired. Students motivated by preparation for postsecondary education plans tended to be more likely to focus on these types of academic courses, compared with peers who were not as likely to continue on in their education.

As presented in Table 4-5, student background characteristics did not appear to be related to enrollment in a specific type of academic course, with a few exceptions, primarily related to foreign language and advanced mathematics classes. Female students were more likely to be enrolled in foreign language courses than were males (23% vs. 15%, $p<.05$). Hispanic students also were significantly more likely to be enrolled in foreign language classes (42%) than were African American (18%, $p<.05$) or white students (15%, $p<.01$). Students from wealthier families (those earning more than $25,000 per year) were more likely to be enrolled in advanced math classes (17%) than were those from families earning less (7%, $p<.01$). Perhaps those from wealthier families were more likely to be able to pursue further education and were choosing high school courses in line with that expectation.

The relationship of demographic characteristics to accumulation of credits in academic content areas followed the pattern of enrollment in these types of courses, with two exceptions: although females were significantly more likely than males to have been enrolled in a foreign language class, both genders earned a similar number of foreign language credits (.2 credits); and Hispanic students earned more social studies credits than did African American students (3.1 credits vs. 2.6 credits, $p<.05$), although there was not a significant difference in the percentage enrolled in social studies classes (reflecting the higher class failure rate in academic subjects for African American students).

Table 4-5

ENROLLMENT IN ACADEMIC CONTENT COURSES AND CUMULATIVE CREDITS EARNED, BY DEMOGRAPHIC CHARACTERISTICS

	Gender		Ethnic Background			Household Income		
Content Area	Male	Female	White	African American	Hispanic	<$12,000	$12,000 - $25,000	>$25,000
Percentage taking:								
English	99.7 (.3)	99.6 (.5)	99.6 (.4)	99.9 (.4)	99.4 (1.4)	98.9 (1.1)	99.7 (.5)	99.8 (.3)
Math*	99.5 (.4)	99.3 (.6)	99.4 (.4)	99.9 (.4)	99.1 (1.7)	99.1 (1.0)	99.5 (.7)	99.6 (.4)
Advanced math†	11.9 (1.8)	11.6 (2.5)	13.1 (1.9)	8.4 (3.1)	11.9 (5.9)	6.7 (2.6)	6.6 (2.3)	17.0 (2.7)
Social studies	97.7 (.8)	97.7 (1.2)	97.1 (.9)	99.3 (.9)	96.8 (3.2)	98.3 (1.4)	97.4 (1.5)	97.1 (1.2)
Science	96.5 (1.0)	96.6 (1.4)	95.9 (1.1)	98.7 (1.3)	96.8 (3.2)	96.2 (2.0)	96.7 (1.7)	96.1 (1.4)
Foreign language	15.1 (1.9)	22.9 (3.3)	15.0 (2.0)	18.5 (4.3)	42.4 (9.1)	19.4 (4.2)	18.0 (3.6)	16.5 (2.6)
Academic support	29.8 (2.5)	32.0 (3.6)	32.6 (2.6)	29.8 (5.0)	21.2 (7.5)	27.2 (4.7)	33.0 (4.4)	31.9 (3.3)
Credits earned:								
English	3.9 (.1)	4.1 (.1)	4.0 (.1)	4.0 (.2)	4.3 (.3)	3.9 (.2)	3.9 (.1)	4.1 (.1)
Math*	2.5 (.1)	2.6 (.1)	2.5 (.1)	2.5 (.1)	2.5 (.2)	2.5 (.1)	2.4 (.1)	2.6 (.1)
Advanced math†	.1 (.1)	.1 (.1)	.1 (.1)	.1 (.1)	.1 (.1)	.1 (.1)	.1 (.1)	.2 (.1)
Social studies	2.7 (.1)	2.9 (.1)	2.8 (.1)	2.6 (.1)	3.1 (.2)	2.7 (.1)	2.7 (.1)	2.9 (.1)
Science	1.9 (.1)	1.9 (.1)	1.9 (.1)	1.9 (.1)	1.9 (.1)	1.9 (.1)	1.8 (.1)	2.0 (.1)
Foreign language	.2 (.1)	.2 (.1)	.2 (.1)	.1 (.1)	.5 (.1)	.1 (.1)	.2 (.1)	.2 (.1)
Academic support	.5 (.1)	.4 (.1)	.5 (.1)	.4 (.1)	.3 (.2)	.3 (.1)	.5 (.1)	.5 (.1)
n	1319	872	1337	347	215	390	487	903

Standard errors are in parentheses.

* Math includes all math classes, including advanced math.

† Advanced math includes geometry, trigonometry, and calculus.

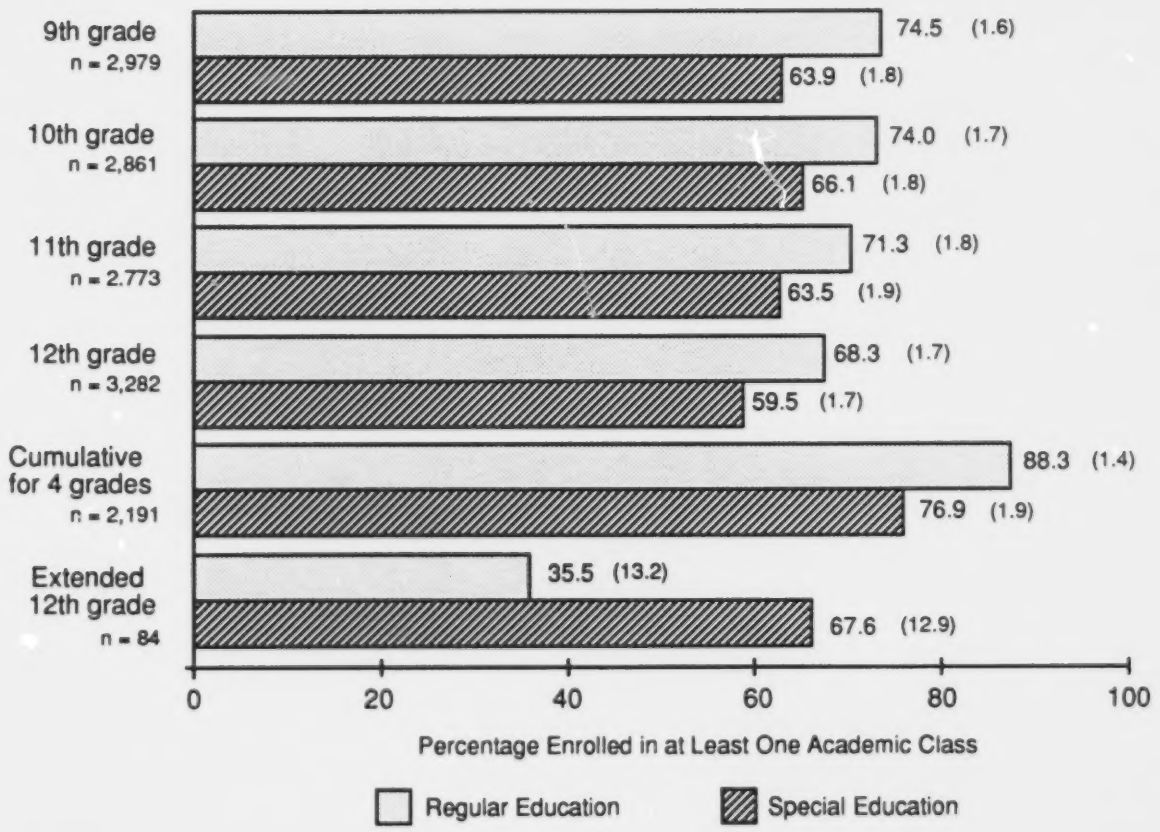
Placement of Academic Courses

As presented earlier, almost all students with disabilities took at least one academic course during their 4 years in high school, with very few differences in the intensity of their academic course enrollment being related to disability or demographic characteristics. Where we do see differences in students' academic experiences is in the settings of their classes—whether

students were integrated into a regular education class or received academic instruction in a special education class.

Although all students in the NLTS were classified as special education students in 1985, more than 88% of those who had completed 12th grade had received academic instruction in a regular education setting at some point in their high school careers (Figure 4-4). This high level of enrollment in regular education academic classes is consistent across all grade levels, with almost three-quarters enrolled in a least one regular education academic class each year in high school.

Throughout the 4 years of high school, youth with disabilities were consistently more likely to be enrolled in regular education academic classes than in special education academic classes, although it is clear that the majority of students received academic instruction in both settings. For example, in 9th grade, 74% were enrolled in a regular education academic class, compared with 64% enrolled in a special education academic class ($p<.001$).



Standard errors are in parentheses.

FIGURE 4-4 PLACEMENT OF ACADEMIC COURSES

Unlike students enrolled in grades 9 through 12, students who remained in high school for extended 12th grade spent most of their academic course time in a special education setting. These students spent approximately one-third (36%) of their academic class time in regular education classes and two-thirds of their time in special education academic classes (68%, $p<.10$).

Placement of Academic Courses, by Disability Category

The level of participation in regular education academic classes varied greatly by disability category, ranging from 96% for youth with visual impairments to 45% for students with multiple handicaps, cumulatively ($p<.001$, Table 4-6). Youth with multiple handicaps were the least

Table 4-6

PLACEMENT OF ACADEMIC COURSES, BY DISABILITY CATEGORY

	Percentage Enrolled in at Least One Course									
Grade Level*	Learning Disabled	Emotionally Disturbed	Speech Impaired	Mentally Retarded	Visually Impaired	Hard of Hearing	Deaf	Orthopedically Impaired	Other Health Impaired	Multiply Handicapped
9th grade										
Regular education	82.0	82.3	88.5	43.6	91.2	83.2	67.0	75.7	84.4	32.1
	(2.1)	(2.9)	(2.4)	(3.1)	(2.3)	(2.5)	(4.6)	(3.2)	(3.3)	(6.6)
Special education	63.8	55.0	30.1	79.7	30.8	47.3	69.7	49.2	35.6	86.8
	(2.7)	(3.8)	(3.5)	(2.5)	(3.7)	(3.3)	(4.4)	(3.8)	(4.4)	(4.8)
n	548	299	282	418	265	387	180	306	200	90
10th grade										
Regular education	83.6	80.2	85.0	37.9	91.0	82.4	67.0	79.9	85.8	31.7
	(2.0)	(3.1)	(2.8)	(3.1)	(2.3)	(2.6)	(4.6)	(3.1)	(3.3)	(6.5)
Special education	64.5	60.5	28.7	86.7	29.0	55.2	77.5	44.7	37.3	81.2
	(2.7)	(3.8)	(3.6)	(2.2)	(3.6)	(3.4)	(4.1)	(3.8)	(4.6)	(5.4)
n	513	281	260	393	265	377	172	289	189	92
11th grade										
Regular education	79.7	78.7	85.7	35.0	92.0	82.3	66.7	74.0	83.9	29.9
	(2.3)	(3.5)	(2.8)	(3.2)	(2.2)	(2.6)	(4.6)	(3.4)	(3.5)	(6.6)
Special education	62.0	54.4	30.3	73.9	30.3	52.3	74.7	49.2	35.2	81.5
	(2.7)	(4.2)	(3.7)	(2.5)	(3.8)	(3.4)	(4.2)	(3.8)	(4.6)	(5.6)
n	527	231	257	375	250	371	178	293	185	88
12th grade										
Regular education	76.2	76.2	83.0	31.5	90.6	80.0	64.3	74.5	79.4	32.7
	(2.2)	(3.4)	(2.8)	(2.8)	(2.2)	(2.6)	(4.2)	(3.1)	(3.8)	(6.4)
Special education	57.6	45.2	28.4	82.7	30.9	49.7	70.9	46.7	37.2	71.0
	(2.5)	(3.9)	(3.3)	(2.3)	(3.5)	(3.2)	(4.0)	(3.6)	(4.6)	(6.2)
n	648	273	311	453	294	430	223	344	194	96
Cumulative for 4 grades										
Regular education	94.8	94.3	91.8	61.6	95.5	92.4	81.6	86.8	90.1	45.2
	(1.4)	(2.3)	(2.4)	(3.9)	(1.8)	(1.9)	(4.0)	(2.8)	(3.3)	(8.0)
Special education	78.7	63.5	35.0	93.1	40.8	63.0	87.6	57.2	49.1	90.7
	(2.6)	(4.8)	(4.2)	(2.0)	(4.4)	(3.5)	(3.4)	(4.2)	(5.5)	(4.7)
n	399	167	215	263	215	322	159	240	137	70

Standard errors are in parentheses.

* There were too few students in the extended 12th grade to disaggregate.

likely to be enrolled in regular education academic classes, followed by those with mental retardation. Students with visual impairments were the most likely to be enrolled in regular education academic classes, with more than 90% in each of the 4 years. More than three-quarters of those in several disability categories consistently were enrolled in regular education academic classes, including those classified as learning disabled, seriously emotionally disturbed, speech impaired, hard of hearing, and other health impaired.

Like regular education placement, special education placement varied widely by disability category. Youth with multiple handicaps and those with mental retardation were the most likely to be enrolled in special education academics, followed by those classified as deaf; cumulatively, 91% of students with multiple handicaps, 93% of students with mental retardation, and 88% of students classified as deaf took one or more special education academic classes.

It was fairly uncommon for students classified as speech impaired to have been enrolled in any special education academic classes, with only about a third of these students having received academic instruction in a special education setting. This is consistent with earlier NLTS findings that students classified as speech impaired were the most likely to be declassified as special education students in secondary school (Wagner, 1991). Fewer than half of those classified as visually impaired or other health impaired had ever been enrolled in a special education academic course in high school.

Placement of Academic Courses, by Demographic Characteristics

Although academic course-taking did not appear to be related to gender, ethnicity, or socioeconomic status, when focusing on placement of courses, we do see differences related to ethnic background and household income. In the early grades, white students were more likely than their African American or Hispanic peers to have taken at least one academic course in a regular education setting (Table 4-7). For example, in 9th grade, 78% of white students had taken a regular education academic course, compared with 61% of their Hispanic peers ($p<.05$); in 10th grade, 79% of white students had taken a regular education academic course, compared with 67% of African American students ($p<.01$). In the upper grades, this difference continued between white and African American students, but Hispanic students who remained in school until 11th and 12th grades were no longer significantly less likely to take regular education academic courses than others.

Similarly, the degree of regular academic course-taking was related to household income through all 4 years of high school. Students from families earning more than $25,000 annually were significantly more likely to receive instruction in regular education classes than were peers from families earning less than $12,000 annually. For example, in 9th grade, 63% of students from families earning less than $12,000 were enrolled in regular education academic courses, compared with 76% of students from families earning from $12,000 to $25,000 ($p<.05$) and 84% of youth from families earning more than $25,000 ($p<.001$). Special

education placement for academic courses was not as consistently related to socioeconomic status; only in 12th grade were students from less wealthy families more likely to take academic classes in a special education setting than their wealthier peers (68% vs. 54%, $p<.01$).

Table 4-7

PLACEMENT OF ACADEMIC COURSES, BY DEMOGRAPHIC CHARACTERISTICS

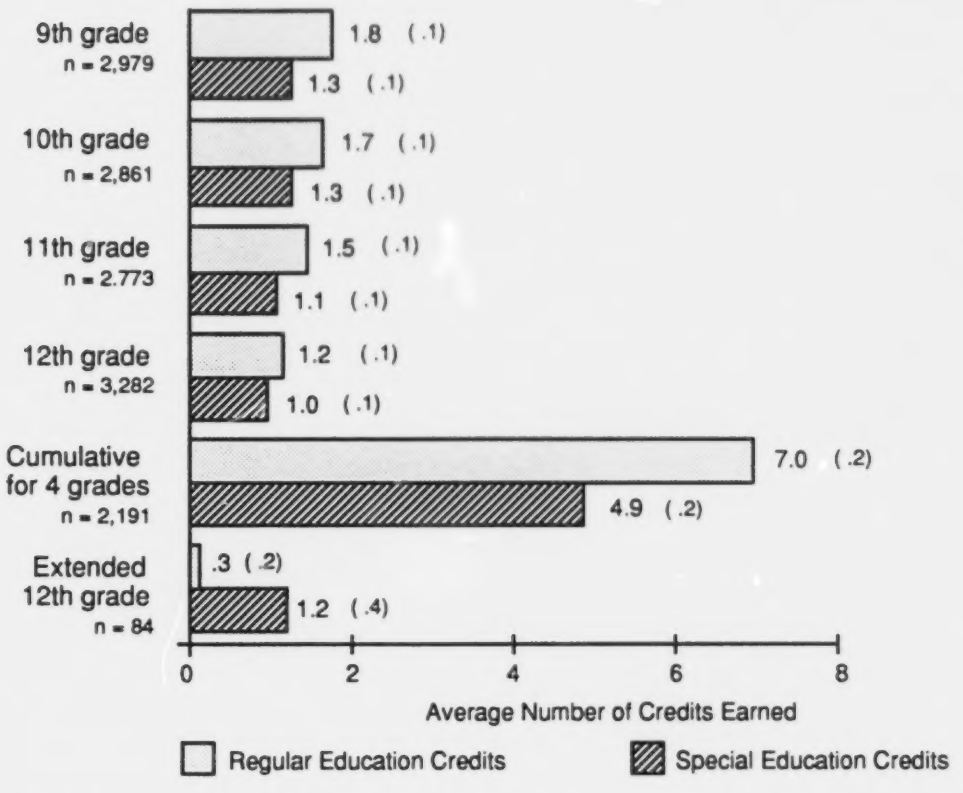
	Percentage Enrolled in at Least One Course							
	Gender		Ethnic Background			Household Income		
Grade Level*	Male	Female	White	African American	Hispanic	<$12,000	$12,000 - $25,000	>$25,000
9th grade								
Regular education	75.6	72.2	77.9	74.1	61.1	63.4	75.7	84.1
	(1.9)	(2.9)	(2.0)	(3.8)	(7.1)	(4.1)	(3.4)	(2.3)
Special education	65.3	60.7	61.9	66.4	65.0	63.0	66.4	57.7
	(2.1)	(3.2)	(2.4)	(4.1)	(6.9)	(4.1)	(3.7)	(3.1)
n	1,821	1,155	1,686	520	305	563	654	1,105
10th grade								
Regular education	76.2	69.3	79.3	67.3	68.1	61.6	77.8	82.3
	(2.0)	(3.1)	(2.0)	(4.2)	(7.1)	(4.3)	(3.4)	(2.4)
Special education	66.6	64.9	62.7	72.7	64.8	70.2	69.8	60.4
	(2.2)	(3.2)	(2.4)	(4.0)	(7.3)	(4.0)	(3.7)	(3.1)
n	1,758	1,101	1,627	501	291	531	630	1,078
11th grade								
Regular education	72.7	68.4	74.5	63.2	74.6	57.6	71.7	82.0
	(2.1)	(3.2)	(2.1)	(4.6)	(6.8)	(4.4)	(3.7)	(2.4)
Special education	63.8	62.8	60.4	71.5	62.0	66.0	68.1	57.4
	(2.3)	(3.3)	(2.4)	(4.4)	(7.6)	(4.2)	(3.8)	(3.1)
n	1,687	1,082	1,634	448	276	514	618	1,084
12th grade								
Regular education	69.1	66.4	72.5	58.8	61.1	54.4	68.2	76.8
	(2.0)	(3.0)	(2.0)	(4.4)	(7.5)	(4.2)	(3.6)	(2.4)
Special education	60.0	58.5	56.0	64.0	57.7	67.9	59.9	53.7
	(2.1)	(3.1)	(2.2)	(4.3)	(7.6)	(4.0)	(3.8)	(2.9)
n	1,980	1,298	1,963	516	292	571	703	1,316
Cumulative for 4 grades								
Regular education	89.7	85.4	88.7	84.6	91.0	79.6	89.5	91.3
	(1.7)	(2.8)	(1.8)	(4.0)	(5.2)	(4.3)	(2.9)	(2.0)
Special education	78.3	74.0	74.3	82.1	71.0	78.2	79.2	71.6
	(2.3)	(3.4)	(2.4)	(4.3)	(8.3)	(4.4)	(3.8)	(3.2)
n	1,319	872	1,337	347	215	390	487	903

Standard errors are in parentheses.

* There were too few students in the extended 12th grade to disaggregate.

Academic Credits Earned in Different Placements

Paralleling their academic course enrollment experiences, each year in high school students with disabilities (other than those who remained in high school after the 12th grade) earned more of their academic credits in regular education courses than in special education courses; for example, in 9th grade, students earned 1.8 credits in regular education academic classes and 1.3 credits in special education academic classes ($p<.01$, Figure 4-5). Those who completed 4 grades in high school earned 7 credits in regular education academic classes and 5 in special education academic classes ($p<.001$). Consistent with their academic course enrollment pattern, those who remained in high school for at least 1 year after completing 12th-grade requirements earned four times as many credits in special education academic subjects (1.2 credits) in this extended 12th-grade year as in regular education academic classes (.3 credits, $p<.05$).



Standard errors are in parentheses.

FIGURE 4-5 ACADEMIC CREDITS EARNED, BY PLACEMENT

Although, overall, students were more likely to earn academic credits in regular education than in a special education setting, this pattern varied by disability category. As presented in Table 4-8, students with visual impairments earned the most regular education academic credits and the fewest special education academic credits (12.7 vs. 1.9, $p<.001$). Conversely, students classified as mentally retarded or multiply handicapped earned significantly more special education academic credits than regular education academic credits. For example, cumulatively, students classified as mentally retarded earned 8.3 academic credits in special education and 2.8 academic credits in regular education ($p<.001$). Students classified as deaf were about equally likely to earn academic credits in special education and regular education settings (6.9 and 6.6 credits).

Table 4-8

ACADEMIC CREDITS EARNED IN DIFFERENT PLACEMENTS, BY DISABILITY CATEGORY

Grade Level*	Learning Disabled	Emotionally Disturbed	Speech Impaired	Mentally Retarded	Visually Impaired	Hard of Hearing	Deaf	Orthopedically Impaired	Other Health Impaired	Multiply Handicapped
9th grade										
Regular education	2.0	2.0	2.8	.8	3.2	2.5	1.8	2.3	2.5	.7
	(.1)	(.1)	(.1)	(.1)	(.1)	(.1)	(.2)	(.1)	(.2)	(.2)
Special education	1.2	1.0	.7	2.1	.6	1.1	2.0	1.3	.7	2.4
	(.1)	(.1)	(.1)	(.1)	(.1)	(.1)	(.2)	(.1)	(.1)	(.2)
n	548	299	282	418	265	387	180	306	200	90
10th grade										
Regular education	1.9	1.7	2.8	.6	3.2	2.4	1.7	2.4	2.3	.7
	(.1)	(.1)	(.1)	(.1)	(.1)	(.1)	(.2)	(.1)	(.2)	(.2)
Special education	1.2	1.0	.7	2.1	.4	1.2	1.9	1.0	.7	2.1
	(.1)	(.1)	(.1)	(.1)	(.1)	(.1)	(.2)	(.1)	(.1)	(.2)
n	520	286	261	399	265	377	174	292	189	91
11th grade										
Regular education	1.6	1.7	2.7	.6	3.3	2.3	1.6	2.3	2.4	.6
	(.1)	(.1)	(.1)	(.1)	(.1)	(.1)	(.2)	(.1)	(.2)	(.2)
Special education	1.0	.9	.6	1.9	.5	1.0	1.7	1.1	.7	1.9
	(.1)	(.1)	(.1)	(.1)	(.1)	(.1)	(.1)	(.1)	(.1)	(.2)
n	532	235	258	375	250	371	180	293	185	87
12th grade										
Regular education	1.3	1.4	2.1	.5	2.5	1.7	1.4	1.8	1.8	.6
	(.1)	(.1)	(.1)	(.1)	(.1)	(.1)	(.1)	(.1)	(.2)	(.2)
Special education	.9	.7	.5	1.6	.4	.8	1.2	.8	.6	1.4
	(.1)	(.1)	(.1)	(.1)	(.1)	(.1)	(.1)	(.1)	(.1)	(.2)
n	652	278	311	451	294	430	223	344	194	90
Cumulative for 4 grades										
Regular education	7.6	8.0	11.0	2.8	12.7	9.5	6.6	9.4	9.6	2.8
	(.3)	(.5)	(.5)	(.3)	(.5)	(.4)	(.6)	(.5)	(.7)	(.7)
Special education	4.4	3.7	2.5	8.3	1.9	3.9	6.9	4.3	3.1	8.4
	(.3)	(.4)	(.4)	(.4)	(.3)	(.3)	(.6)	(.5)	(.5)	(.8)
n	399	167	215	263	215	322	159	240	137	70

Standard errors are in parentheses.

* There were too few students in the extended 12th grade to disaggregate.

As with academic course enrollment, ethnic background and household income were related to type of academic credits earned. White students consistently earned more regular education academic credits than did African American students at every grade level; for example, in 9th grade, white students earned 2.0 regular education academic credits, whereas African American students earned 1.6 ($p<.01$, Table 4-9). In contrast, Hispanic students' experiences varied by grade level. In both 9th and 10th grades, they were significantly less likely to earn regular education academic credits (e.g., 1.3 credits earned by Hispanic students vs. 2.0 credits earned by white students in 9th grade, $p<.01$). In 11th and 12th grades, there were no longer differences in the number of regular education academic credits earned by Hispanic students who remained in high school until the upper grades, compared with their white peers.

Table 4-9

ACADEMIC CREDITS EARNED IN DIFFERENT PLACEMENTS, BY DEMOGRAPHIC CHARACTERISTICS

	Gender		Ethnic Background			Household Income		
Grade Level*	Male	Female	White	African American	Hispanic	<$12,000	$12,000 - $25,000	>$25,000
9th grade								
Regular education	1.8	1.9	2.0	1.6	1.3	1.4	1.7	2.3
	(.1)	(.1)	(.1)	(.1)	(.2)	(.1)	(.1)	(.1)
Special education	1.3	1.4	1.3	1.5	1.4	1.4	1.3	1.2
	(.1)	(.1)	(.1)	(.1)	(.2)	(.1)	(.1)	(.1)
n	1,821	1,155	1,686	520	305	563	654	1,105
10th grade								
Regular education	1.7	1.7	2.0	1.3	1.5	1.3	1.7	2.1
	(.1)	(.1)	(.1)	(.1)	(.2)	(.1)	(.1)	(.1)
Special education	1.3	1.4	1.2	1.5	1.6	1.5	1.3	1.2
	(.1)	(.1)	(.1)	(.1)	(.2)	(.1)	(.1)	(.1)
n	1,756	1,101	1,625	501	291	531	629	1,077
11th grade								
Regular education	1.5	1.6	1.6	1.2	1.7	1.2	1.4	1.8
	(.1)	(.1)	(.1)	(.1)	(.3)	(.1)	(.1)	(.1)
Special education	1.1	1.2	1.1	1.2	1.3	1.3	1.1	1.0
	(.1)	(.1)	(.1)	(.1)	(.3)	(.1)	(.1)	(.1)
n	1,686	1,081	1,631	448	276	512	618	1,083
12th grade								
Regular education	1.2	1.2	1.3	1.0	1.2	1.0	1.1	1.4
	(.1)	(.1)	(.1)	(.1)	(.2)	(.1)	(.1)	(.1)
Special education	.9	1.0	.9	1.2	1.2	1.2	.9	.9
	(.1)	(.1)	(.1)	(.1)	(.2)	(.1)	(.1)	(.1)
n	1,977	1,292	1,960	514	290	568	702	1,314
Cumulative for 4 grades								
Regular education	6.9	7.2	7.5	6.0	6.9	5.8	6.5	8.0
	(.3)	(.4)	(.3)	(.6)	(1.0)	(.6)	(.5)	(.4)
Special education	4.9	5.0	4.4	5.6	5.8	5.6	4.7	4.3
	(.3)	(.4)	(.3)	(.5)	(1.0)	(.5)	(.4)	(.3)
n	1,319	872	1,337	347	215	390	487	903

Standard errors are in parentheses.

* There were too few students in the extended 12th grade to disaggregate.

Students from wealthier families (those earning more than $25,000 per year) consistently earned more regular education academic credits than did their peers from less wealthy families (8.0 vs. 5.8 regular education academic credits, $p<.01$).

Placement of Academic Content Areas

Approximately three-quarters of all students with disabilities had taken at least one English, math, social studies, and science class in a regular education setting by the time they had completed their high school coursework. Students were consistently and significantly more likely to receive their core instruction in a regular education setting than in a special education setting; for example, cumulatively, 74% were enrolled in a regular education math course, whereas 51% were enrolled in a special education math course ($p<.001$, Table 4-10).

Table 4-10

PLACEMENT IN ACADEMIC CONTENT AREA COURSES

Academic Content Area	Cumulative Percentage Enrolled	Cumulative Credits Earned
English		
Regular education	75.8	2.1
	(1.9)	(.1)
Special education	62.4	1.9
	(2.2)	(.1)
Math*		
Regular education	74.3	1.5
	(2.0)	(.1)
Special education	50.7	1.0
	(2.2)	(.1)
Advanced math†		
Regular education	11.4	.1
	(1.4)	(.0)
Special education	.3	.0
	(.2)	(.0)
Social studies		
Regular education	74.5	1.8
	(1.9)	(.1)
Special education	46.4	1.0
	(2.2)	(.1)
Science		
Regular education	72.5	1.3
	(2.0)	(.0)
Special education	37.7	.6
	(2.2)	(.0)
Foreign language		
Regular education	15.8	.2
	(1.6)	(.0)
Special education	1.5	.0
	(.5)	(.0)
Academic support		
Regular education	7.6	.1
	(1.2)	(.0)
Special education	25.6	.4
	(1.9)	(.1)
n	2,191	2,191

Standard errors are in parentheses.

* Math includes all math classes, including advanced math.

† Advanced math includes geometry, trigonometry, and calculus.

English was the most likely of the four core classes to have been taken in a special education setting (62%), followed by math and social studies (51% and 46%; compared with 62% for English, $p<.001$). Science was the least likely core course to have been taken in a special education setting, although more than one-third of all students had taken at least one special education science class during their high school careers (38%; compared with social studies 46%, $p<.01$).

In addition to these core classes, students were enrolled in foreign language and academic support classes. Almost all foreign language instruction occurred in regular education settings; cumulatively, 16% studied another language in a regular education class, compared with 2% in a special education setting ($p<.001$). Conversely, academic support courses were taken primarily in special education settings; cumulatively, 26% of students with disabilities received academic support in special education settings, compared with 8% in regular education settings ($p<.001$). Credits earned by students in these academic content areas followed the pattern of course enrollment in these classes.

The relationships of disability categories and demographic characteristics to placement of academic content classes were similar to the relationships of these characteristics to academic classes as a whole. Students categorized as speech or visually impaired were consistently more likely than other students to have taken academic content courses in regular education settings and less likely to have taken these classes in special education settings. Conversely, those classified as mentally retarded or multiply handicapped, followed by those categorized as deaf, were among the least likely to be enrolled in regular education academic content area classes, and the most likely to be enrolled in special education academic content area courses.

African American students with disabilities consistently were more likely than their white peers to have been enrolled in special education classes, across all academic content areas. Those from wealthier families were less likely to have been enrolled in special education academic content courses, and more likely to have received academic content information in regular education settings.

Experiences in Academic Classes

By reviewing students' course transcripts, we have learned that high school students with disabilities spent most of their school days in academic classes. Yet a course title on a transcript does not tell much beyond the type of course and the educational setting. What were students' experiences in these academic courses that were such an integral part of their school career? Most of their academic coursework took place in a regular education setting; how did they fare in these regular education academic courses? Were they able to keep up with other students in their classes? Did they receive any additional help to keep up? Did their teachers receive support because they had students with disabilities mainstreamed into their regular education classes? To begin to discover what was in this "black box" of academic

coursework, teachers of a subsample of students were asked to report on those students' experiences in their regular and special education classes. As described in Chapter 2, a survey was administered to teachers of a subsample of NLTS students: those who had been in their last year of high school (12th grade) in 1988-89 or 1989-90, and were classified as learning disabled, emotionally disturbed, speech impaired, or mildly/moderately mentally retarded, and those who were still in school at the time of the last wave of data collection in 1990. Here we focus on teachers' responses regarding class size, student/teacher ratios, teacher expectations, and support provided to mainstreamed students and their teachers.

Recently, a great deal of attention has been given to class size issues; many feel that it is harder for students to learn in larger classes, especially students with learning problems. Special education classes often have been viewed as one way for students to get more individual attention in smaller classes. As presented in Figure 4-6, there were many more students and fewer adults in regular education academic classes than in special education academic classes. Regular academic classes averaged 23 students, compared with 9 students in special education academic classes ($p<.001$). The 23 students in regular education academic classes were usually

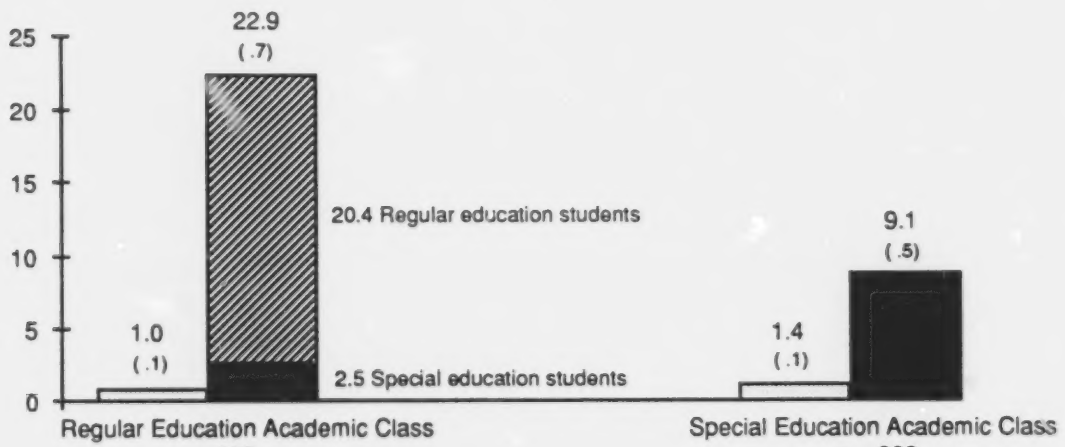


FIGURE 4-6 MEAN NUMBER OF TEACHERS AND STUDENTS IN SPECIAL AND REGULAR EDUCATION ACADEMIC CLASSES

taught by 1 teacher, while special education academic teachers, working with classes of 9 students, often had the assistance of another adult on a part-time basis (1.4 teachers and aides, $p<.01$). Fewer than 10% of the students in regular academic classes were special education students. Class size and teacher/student ratios did not vary significantly between disability categories or students with different demographic characteristics.

With larger classes and little aide time, were regular education teachers able to provide for the special needs of students with disabilities in their classes? Were those students expected to keep up with other students in their class, and did they keep up? To learn about teachers' performance expectations for special education students placed in their regular academic classrooms, teachers were asked to indicate whether particular students with disabilities were expected to keep up with the other students in the class, and whether the students generally did keep up in their regular education classes. As presented in Table 4-11, more than 90% of students with disabilities in regular education academic classes were expected to keep up with other students in their classes. Students with learning disabilities were slightly less likely than other students to be expected to keep up (95% vs. 100% for those classified as hard of hearing or deaf, $p<.05$). Teachers held the lowest expectations for students classified as mentally retarded; only 68% were expected to keep up with others in their regular education academic classes, compared with 99% for students classified as orthopedically or other health impaired ($p<.001$).

Interestingly, when looking at the percentage that were rated as able to keep up in their academic classes, students with mental retardation exceeded their teachers' expectations; students in all other categories were seen as generally less likely to keep up with others in the class, compared with their teacher's expectations. Although only 68% of students classified as mentally retarded were expected to keep up with others, teachers reported that almost 80% did keep up in their classes. Teachers perceived that between 76% and 95% of students in the other disability categories generally kept up with their class, while their expectation that these students would keep up ranged from 95% to 100%. Teachers' performance expectations and perceptions of students with disabilities with respect to keeping up with their classes did not appear to be related to students' gender, ethnic background, or household income.

Were these mainstreamed students and teachers provided with any support services to help ensure the students' success in regular education classrooms? Teachers were asked whether students were provided with help to keep up with others in their regular education academic classes. As Table 4-12 indicates, teachers felt that accommodations were necessary for more than 81% of students with disabilities. Students who were classified as hard of hearing or deaf (97%), followed by those classified as mentally retarded (90%), were the most frequently thought to need accommodations in a regular education setting, whereas those with speech impairments were the least likely (51%).

Table 4-11

KEEPING UP WITH OTHER STUDENTS IN REGULAR EDUCATION ACADEMIC CLASSES

	Percentage Expected to Keep Up	Percentage That Generally Did Keep Up	n
Disability category			
All conditions*	91.6 (2.5)	85.8 (3.5)	475
Learning disabled	94.7 (2.7)	86.6 (4.6)	147
Emotionally disturbed	100 (.1)	94.8 (5.2)	63
Speech impaired	97.3 (2.9)	88.4 (8.4)	89
Mentally retarded	68.3 (8.0)	79.3 (7.2)	66
Hard of heaing/deaf	100 (.1)	88.9 (7.4)	44
Orthopedically impaired/ other health impaired	98.9 (2.9)	76.4 (11.6)	41
Gender			
Male	91.5 (3.1)	82.4 (4.7)	303
Female	91.7 (4.1)	92.8 (4.2)	172
Ethnic background			
White	93.2 (2.6)	88.6 (3.6)	334
African American	89.6 (7.8)	81.8 (10.7)	68
Hispanic	91.7 (10.1)	95.6 (8.2)	33
Income			
Less than $12,000	95.2 (4.4)	85.3 (8.2)	85
$12,000 - $25,000	89.7 (5.3)	90.8 (5.6)	124
More than $25,000	92.4 (3.6)	84.5 (5.4)	205

Standard errors are in parentheses.

* "All conditions" includes youth in each of the 11 federal special education disability categories. Percentages are reported separately only for categories with at least 25 students.

Table 4-12

SUPPORT PROVIDED TO STUDENTS WITH DISABILITIES IN REGULAR ACADEMIC CLASSES, BY DISABILITY CATEGORY

Percent Receiving	All Conditions*	Learning Disabled	Emotionally Disturbed	Speech Impaired	Mentally Retarded	Hard of Hearing/ Deaf	Orthopedically/ Other Health Impaired
Accommodations needed	81.6 (3.5)	82.8 (4.6)	69.9 (9.3)	50.6 (9.2)	90.3 (5.1)	97.4 (3.7)	74.3 (11.9)
Accommodations received	92.1 (2.4)	91.2 (3.4)	87.1 (6.8)	92.8 (4.7)	97.7 (2.6)	93.1 (5.9)	100.0 (.1)
Type of accommodations							
Student progress monitored by special education teacher	44.8 (4.4)	43.7 (6.0)	32.3 (9.5)	18.1 (7.1)	63.8 (8.3)	57.9 (11.6)	42.1 (13.5)
Helping taking tests	41.6 (4.4)	41.4 (5.9)	29 (9.2)	14.6 (6.5)	58.9 (8.5)	39.8 (11.5)	21.0 (11.1)
Tutoring by special education teacher	35.4 (4.3)	37.2 (5.8)	23.1 (8.6)	15.0 (6.5)	39.5 (8.5)	5[illegible].6 (>1.7)	30.1 (12.5)
More 1-to-1 instruction	27.4 (4.0)	26.3 (5.3)	22.7 (8.5)	26.7 (8.1)	34.6 (8.2)	24.1 (10.0)	44 (13.6)
Study skills assistance	24.2 (3.8)	26.8 (5.3)	23.5 (8.6)	19.1 (7.2)	11.7 (5.6)	30.5 (10.8)	42.6 (13.5)
Additional study time in special education classroom	21.0 (3.6)	19.3 (4.8)	19.2 (8.0)	11.3 (5.8)	30.7 (8.0)	36.9 (11.3)	22.7 (11.4)
Modified grading standards	18.5 (3.5)	16.1 (4.4)	3.3 (3.7)	3.7 (3.4)	46.0 (8.6)	5.1 (5.1)	4.9 (5.9)
Slower-paced instruction	16.7 (3.3)	15.6 (4.4)	15.6 (7.4)	8.5 (5.1)	24.9 (7.5)	11.7 (7.5)	16.8 (10.2)
Special materials	14.1 (3.1)	12.5 (4.0)	6.8 (5.1)	9.7 (5.4)	23.3 (7.3)	31.1 (10.8)	20.5 (11.0)
Reader/interpreter	12.2 (6.0)	11.3 (7.9)	--	--	--	37.1 (11.4)	9.8 (9.3)
Modified tests	10.0 (2.7)	8.3 (3.3)	6.4 (5.0)	9.1 (5.3)	19.6 (6.9)	10.5 (7.2)	8.8 (7.7)
Teacher's aides	7.2 (2.3)	6.2 (2.9)	8.8 (5.8)	6.4 (4.5)	9.0 (5.0)	20.9 (9.5)	11.3 (8.6)
Additional time to complete assignments	7.2 (2.3)	6.8 (3.0)	2.2 (3.0)	10.2 (5.5)	6.1 (4.1)	19.5 (9.3)	30.3 (12.6)
Behavior management programs	6.4 (2.2)	6.7 (3.0)	10.9 (6.3)	.6 (1.4)	4.2 (3.5)	2.3 (3.5)	3.0 (4.7)
Peer tutors	4.5 (1.9)	4.6 (2.5)	7.0 (5.2)	1.1 (1.9)	2.4 (2.7)	7.4 (6.1)	13.1 (9.2)
Other	3.9 (1.7)	4.7 (2.6)	0 (.0)	3.8 (3.5)	2.2 (2.5)	17.9 (9.0)	0.9 (2.6)
n	474	146	64	87	66	44	41

Standard errors are in parentheses.

* "All conditions" includes youth in each of the 11 federal special education disability categories. Percentages are reported separately only for categories with at least 25 students.

Teachers reported providing several types of assistance, with no one particular form of assistance being provided much more commonly than others. These varied types of assistance possibly reflect the individualized approach that is often necessary and appropriate when teaching students with disabilities. The most frequently reported types of student assistance included monitoring of student progress by a special education teacher, help in taking tests, tutoring by a special education teacher, and increased one-to-one instruction. The types of help students received varied somewhat by disability category, although not by demographic characteristics. Those classified as hard of hearing or deaf were more likely to receive help from a reader/interpreter (37%) and significantly more likely to receive tutoring from a special education teacher (54%) than were their peers with other disabilities (e.g., 54% vs. 23% for those categorized as seriously emotionally disturbed, $p<.05$). Students classified as orthopedically or other health impaired were more likely to receive additional time to complete assignments (e.g., 30% vs. 2% for those classified as seriously emotionally disturbed, $p<.05$), whereas those with serious emotional disabilities were more frequently reported to have been involved in behavior management programs (11%) than were their peers with other disabilities. Modified grading standards were most frequently reported for those classified as mentally retarded, with 46% of their teachers reporting modifying standards, compared with 16% of those with learning disabilities, which was the next most likely group to have modified grading standards ($p<.01$).

When students with disabilities were enrolled in regular education classes, not only did the students often need additional support, but often their teachers needed support as well. More than 85% of mainstreamed students had regular education academic teachers who reported the need for assistance when a student with disabilities was enrolled in their class. As presented in Table 4-13, the most frequently reported type of assistance available to these teachers were consultation services from special education staff, with almost 80% reporting the availability of this type of help. The other types of assistance made available to a teacher because a student with disabilities was in his/her classroom occurred much less frequently, with only 25% reporting the next most frequently occurring type of assistance, special procedures to use with students with disabilities. There were few significant differences in the type of assistance teachers received based on the disability category or demographic characteristics of the students in their class.

Academic Instruction of Students Not Assigned to a Grade Level

This chapter has focused on the academic course-taking experiences of students whose programs followed a traditional path of progressing from grade to grade. Yet some students with disabilities did not follow this traditional path; most of their coursework did not receive Carnegie credit units, and they were not promoted to new grades on the basis of an increasing accumulation of these credits. Courses taken by these students are not usually reported on traditional transcripts. To learn about the course-taking experiences of students who did not receive transcripts, we asked schools to complete a school program content form that

Table 4-13

SUPPORT PROVIDED TO TEACHERS WHEN A STUDENT WITH A DISABILITY IS ENROLLED IN THEIR REGULAR ACADEMIC CLASS, BY DISABILITY CATEGORY

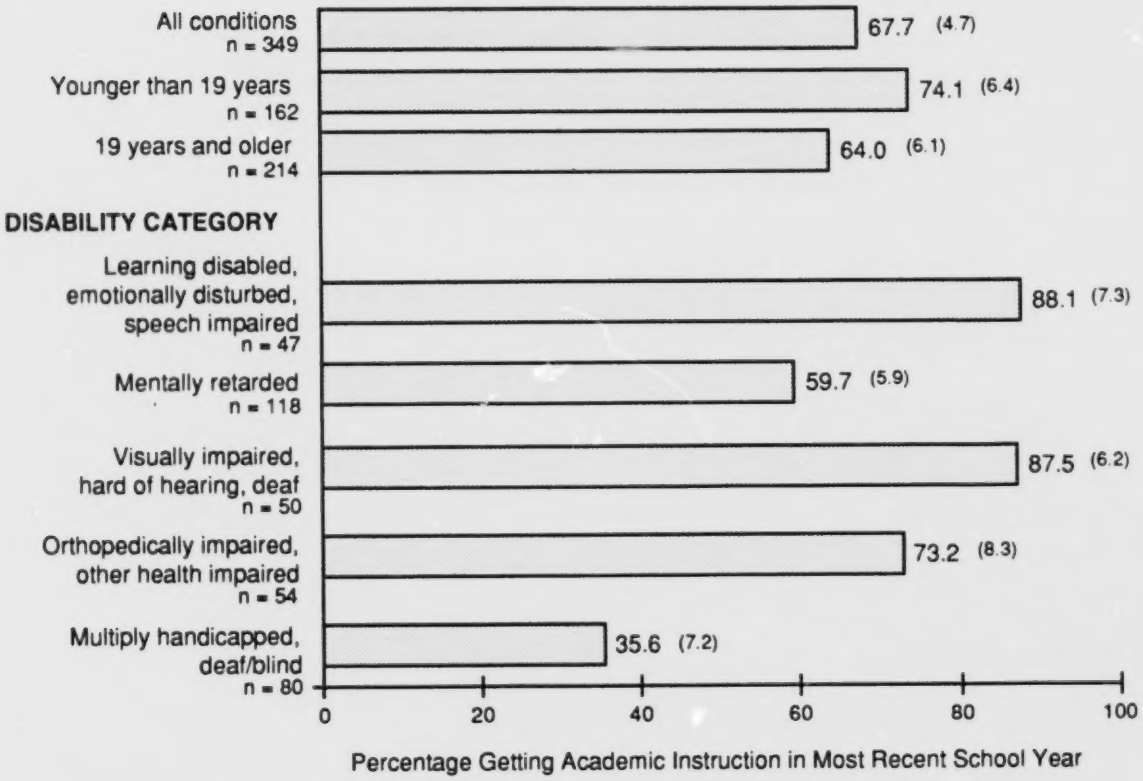
		Students Classified As:					
Percent of students whose teacher:	All Conditions*	Learning Disabled	Emotionally Disturbed	Speech Impaired	Mentally Retarded	Hard of Hearing/ Deaf	Orthopedically/ Other Health Impaired
Needed support	85.5 (3.5)	87.3 (4.5)	69.5 (10.8)	63.6 (12.8)	89.3 (5.5)	95.8 (4.7)	69.0 (12.6)
Received support	96.3 (1.9)	96.7 (2.4)	89.2 (7.3)	95.8 (4.7)	98.6 (2.1)	96.1 (4.5)	87.4 (9.1)
Received following types of assistance							
Consultation services by special education staff	79.0 (4.1)	80.8 (5.3)	55.5 (11.6)	56.7 (13.1)	87.9 (5.8)	84.4 (8.5)	55.4 (13.6)
Special procedures	25.4 (4.4)	22.6 (5.7)	27.9 (10.5)	9.6 (7.8)	37.5 (8.6)	42.6 (11.6)	19.3 (10.8)
In-service training on needs of students with disabilities	19.2 (3.9)	17.0 (5.1)	25.1 (10.1)	17.1 (10.0)	26.4 (7.9)	17.4 (8.9)	14.9 (9.7)
Special materials made available	13.6 (3.4)	13.4 (4.6)	10.8 (7.3)	.9 (2.6)	16.8 (6.7)	24.2 (10.0)	8.4 (7.6)
Smaller class size or student load	10.7 (3.1)	10.7 (4.2)	10.7 (7.2)	11.1 (8.3)	12.1 (5.8)	10.3 (7.1)	4.0 (5.4)
Teacher's aides	6.9 (2.5)	6.2 (3.3)	3.1 (4.0)	3.3 (4.7)	11.1 (5.6)	18.1 (9.0)	7.5 (7.2)
Other	2.7 (1.6)	2.9 (2.3)	0 (.0)	7.0 (6.8)	1.9 (2.4)	7.2 (6.1)	.9 (2.6)
n	379	116	48	43	62	44	41

Standard errors are in parentheses.

* "All conditions" includes youth in all 11 federal special education disability categories. Percentages are reported separately only for categories with at least 25 students.

described the percentage of time students spent in their most recent school year learning different types of skills (e.g., academics, life skills, vocational skills).

Students not assigned to a grade level were significantly less likely to have studied academic subjects than were their peers with disabilities in grades 9 through 12. For example, among students in 12th grade (the grade when the fewest students enrolled in academic classes), 97% took at least one academic class, compared with an academic class enrollment of 68% for those not assigned to a grade level ($p<.001$, Figure 4-7).



Standard errors are in parentheses.

FIGURE 4-7 ACADEMIC INSTRUCTION OF STUDENTS NOT ASSIGNED TO A GRADE LEVEL

Unlike students at grade levels, these students spent most of their day in special education settings. Consistent with the trend we saw earlier of decreased enrollment in academic subjects as students progressed through their high school careers, older students not at grade levels were less likely to receive academic instruction than their younger peers (although the difference is not statistically significant because of small samples; Figure 4-7).

Similar to their peers at grade levels, students classified as multiply handicapped or mentally retarded were the least likely to be receiving academic instruction (Figure 4-7). About one-third (36%) of students classified as multiply handicapped and not at grade level received academic instruction, compared with 88% of those classified as learning or emotionally disabled or speech impaired ($p<.001$); 60% of those classified as mentally retarded received academic instruction, compared with 88% of those classified as learning or emotionally disabled or speech impaired ($p<.01$).

Student's gender, ethnic background, and household income did not appear to be related to whether a student not at grade level received academic instruction.

For the students who received transcripts that listed specific courses, we were able to ascertain their participation in classes related to specific academic content areas. Consistent with students at grade levels, students not at grade levels were most likely to receive instruction in English (60%), followed by math (56%) and social studies (40%) instruction. Slightly more than one-quarter (27%) were enrolled in science classes, with foreign language and academic support courses being rare (5% and 1%, Figure 4-8).

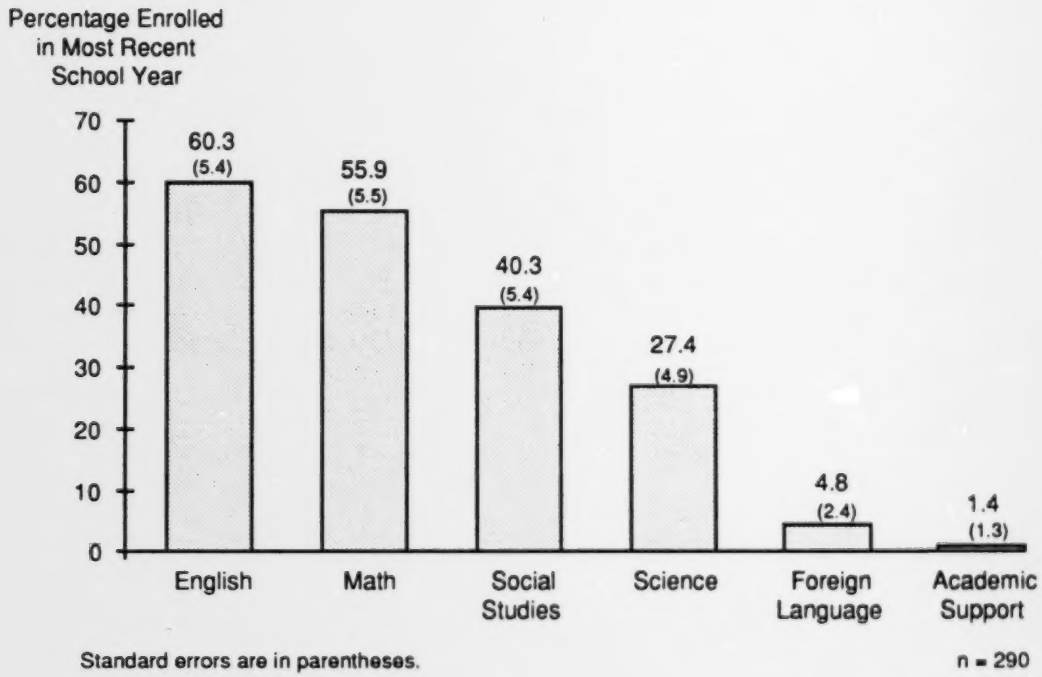


FIGURE 4-8 ACADEMIC CONTENT AREA INSTRUCTION OF STUDENTS NOT ASSIGNED TO A GRADE LEVEL

Summary and Conclusions

This chapter has examined the academic course-taking experiences of students with disabilities in regular secondary schools. Academic courses here included coursework in English, social studies, mathematics, science, and foreign language, as well as the courses that support these academic classes, such as study skills courses.

The NLTS has found that academic classes were central to the high school experiences of most students with disabilities. Virtually all students with disabilities took at least one academic course during each year in high school, regardless of disability or background characteristics.

- **How many academic credits did students with disabilities earn?**

  Requirements for high school graduation vary by state, but, on the average, states require students to have a total of 11 or 12 credits in English, social studies, mathematics, and science. Students with disabilities who completed 4 grades of high school appeared to meet these state graduation requirements. Students with disabilities who had been in high school for 4 grades had accumulated 12 credits in academic subjects. Students with disabilities earned fewer academic credits than their nondisabled peers, who were reported by the NHSTS to have accumulated 15 academic credits by the end of 12th grade.

- **To what extent did academic enrollment vary during the 4 years of high school?**

  Youth with disabilities earned fewer academic credits each subsequent year in high school. This was true for youth in all disability categories and with different demographic characteristics. This is the inverse of their experience with vocational courses; students earned more vocational credits in 12th grade than in 9th grade.

- **To what extent did the number of credits earned in academic subjects vary by disability and demographic characteristics?**

  Students with visual impairments earned the most academic credits cumulatively, followed by those with hearing, speech, or orthopedic impairments. Students who earned the most academic credits were those in the disability categories that also were significantly more likely to continue on to postsecondary education. Youth with mental retardation, multiple handicaps, or serious emotional disabilities earned the fewest academic credits.

  Students' ethnic background seemed to be related to academic course-taking only in the early grades. By the 11th and 12th grades, there were no longer any differences (by ethnic background) in the number of academic credits earned (probably because those who were failing academic courses had dropped out by the 11th or 12th grade). Students from wealthier families consistently earned more academic credits than did their peers from less wealthy families.

- **What academic courses did secondary students with disabilities take?**

  Especially during the early grades, students were usually enrolled in a core group of courses, including English, math, social studies, and science. English and math were the types of academic classes most frequently enrolled in by students with disabilities. Whereas English enrollment remained consistently high across high school grades, with at least 90% of students in each high school grade having taken at least one English course, the percentage enrolled in math steadily decreased over the 4 years of high school, so that fewer than half enrolled in a math class by 12th grade.

  Very few students with disabilities enrolled in courses often described as "college prep" classes, such as foreign language and advanced math. Students who earned the most credits in foreign language and advanced math classes were those more likely to continue on to postsecondary school, especially those classified as visually, speech, orthopedically, or other health impaired. Students from wealthier families also were more likely to have been enrolled in advanced math classes.

- **To what extent were students with disabilities included in regular education academic classes?**

  High school students with disabilities received most of their academic instruction in regular education classes. Each year in high school, these students earned more of their academic credits in regular education courses than in special education courses. This was true across all academic courses, as well as for specific academic content courses.

  Students with visual impairments earned the most regular academic credits and the fewest special education academic credits. Students classified as mentally retarded or multiply handicapped earned significantly more special education academic credits than regular education academic credits.

  Ethnic background and household income were related to academic course placement. White students consistently earned more regular education academic credits than African American students in every grade. Hispanic students' experiences varied by grade level. In 9th and 10th grades, they were significantly less likely to earn regular education academic credits; for those who remained in high school until the 11th and 12th grades, however, there were no longer any differences in the number of regular education academic credits earned by Hispanic students, compared with their peers. Students from wealthier families consistently earned more regular education academic credits than did their peers from less wealthy families.

- **What supports were provided to teachers with "mainstreamed" students and to those students in regular education academic classes?**

  More than 85% of mainstreamed students had regular education academic teachers who reported the need for assistance when a student with disabilities was enrolled in their class. The most frequently reported type of assistance available to these teachers was consultation services from special education staff, with almost 80% reporting the availability of this type of help.

Most of the students with disabilities who were placed in regular academic classes were expected by teachers to keep up with other students in their class. However, regular education teachers acknowledged that the majority of students needed accommodations in their classes (81%). A wide variety of accommodations were reported to be provided to students in regular education classes, with no one particular form of assistance being provided much more commonly than others. These varied types of assistance possibly reflect the individualized approach that is often necessary and appropriate when teaching students with disabilities.

- **How did the academic course-taking experiences of students in ungraded programs compare with the experiences of those at grade levels?**

  Unlike students at grade level, students not assigned to a grade level spent most of their day in special education settings. Similar to their peers at grade level, older youth in ungraded programs were less likely to receive academic instruction than were their younger peers.

  Students not at grade level who were classified as multiply handicapped or mentally retarded were the least likely to be receiving academic instruction. Students' gender, ethnic background, and household income did not appear to be related to whether students received academic instruction.

Similar to their high school peers without disabilities, students with disabilities spent more than half of their school time in academic courses. Yet, when the NLTS asked teachers to report on the primary goal of transition planning for 12th-grade students with disabilities, competitive employment was the most frequently reported goal, followed by attending a postsecondary vocational training program (see Chapter 6). Did academic classes best meet the needs of these students, or were they caught in the push for higher academic standards? Did increasing the number of academic credits required for graduation mean that students with disabilities did not have room in their schedules for courses they otherwise might have taken, especially vocational and life skills courses?

Students with disabilities are far from a homogeneous group, and the answers to these questions probably are different for students with different types of disabilities. For example, Lieberman (1992) distinguished mental disabilities, which mostly have to do with cognition and ideational processes (usually expressed in the form of mental retardation, learning disabilities, and emotional disorders), from physical disabilities, those having to do with acquiring information from sensory input, movement, and physical response. He felt that "limitations of choices are considerably more severe for the mentally disabled than the physically disabled ... especially true when it comes to choices that involve academic pursuits and/or powerful thought processes." (Lieberman, 1992, p. 16).

The NLTS found that academic course-taking varied widely by disability category. Those with visual, hearing, speech, and orthopedic impairments earned the most academic credits overall, as well as credits in academic courses such as advanced math, science, and foreign language. When the postsecondary goals of these students (whom Lieberman would classify as physically disabled) were examined, attending a 2-year or 4-year college was the most

frequently reported primary goal. This emphasis on postsecondary education reflects closely the actual postschool experiences of these young people in their early years after secondary school; they were the group of students most likely to continue on to postsecondary education (Newman and Cameto, 1993). Clearly, for this group of students with disabilities, a strong focus on academic classes during high schools seems to have been appropriate.

Yet those classified as learning disabled, emotionally disturbed, or mentally retarded also were spending more than half of their high school careers in academic courses, even though they were most likely to cite employment and vocational training programs as their primary postsecondary goals. These students were "at risk to succeed in an academic curriculum that demands mental competence" (Lieberman, 1992, p. 17). Earlier NLTS work has found that students with learning and emotional disabilities were the most likely to fail a class, particularly an academic class (Wagner, 1991a). These were also the students most likely to drop out of high school (Wagner, 1991b).

From interviews with youth with learning and emotional disabilities who had dropped out of school, DeStefano, Hasazi, McGinty, and Topper (1993, p. 13) found that "many talked of their frustration with certain academic classes and their desire to learn vocational skills that would prepare them for jobs in the future." For example, one young man complained about the inappropriateness of the curriculum and his lack of success in seemingly useless courses and the inability to gain access to the things he knew he was good at: "My counselor said that I had to get too many credits and that I couldn't take art or shop classes ... I has to pass social studies first, but I failed that so I couldn't take shop in the second nine weeks" (DeStefano, Hasazi, McGinty, and Topper, 1993, p. 14).

One could question whether these students would have been more successful in school and more willing to remain in school if they had been provided with an alternative curriculum, one more consonant with their strengths and goals, and not as focused on academic subjects.

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5 PARTICIPATION IN VOCATIONAL EDUCATION BY STUDENTS WITH DISABILITIES

by Jose Blackorby

Since its inception with the Smith-Hughes Act of 1917, vocational education has enjoyed widespread political and financial support in the United States because of its contribution to a range of individual and societal goods. Vocational education ensures the provision of a skilled labor pool that is responsive to the changing needs of the labor market, an issue that is as relevant in 1993 as it was in 1917. Also, vocational education offers traditionally underrepresented groups the promise of the opportunity to gain access to the economic mainstream and the American dream. In 1917, these groups included many recent immigrants and the working poor. Today, individuals with disabilities and economically disadvantaged persons also are potential beneficiaries of vocational education programs.

The extent to which vocational education has achieved its goals for the general population has been widely debated (Golloday and Wulfsberg, 1981). Proponents assert that graduates of vocational education programs are employed at higher rates immediately after schooling and enjoy higher wage growth than peers without similar training. Opponents contend that educational attainment is the most cogent predictor of economic success. This debate no doubt will continue; however, a recent review of the issue suggests that vocational education may be neither as effective as its advocates claim nor as ineffective as its critics claim. Lotto (1988) argues that vocational education probably confers postschool benefits for youth who take occupationally specific courses and who subsequently assume positions in the labor market that require skills similar to those taught in their vocational education classes. In addition, for students who persist in their secondary schooling until 11th grade, vocational education may provide curricular options sufficiently different from the mainstream to allow some youth to complete secondary schooling instead of dropping out (Lotto, 1988).

Vocational Education and Students with Disabilities

The passage of P.L. 95-142 in 1975 affected the vocational education system as well as the general and special education systems. For example, to the extent that career-oriented skills might be considered part of a special education student's free, appropriate education, vocational education had to be considered an instructional option for some students with disabilities. Just as with many other sectors of the educational system, however, there often was a lack of communication and cooperation among professionals in vocational education, special education, and general education regarding the education of students with disabilities (National Association of State Boards of Education, 1979). The popular conclusion was that most students with disabilities did not have sufficient access to vocational education (Bottoms and Copa, 1983; Cobb and Phelps, 1983; Phelps, 1984). In the late 1970s and early 1980s, it

was thus considered of paramount importance to involve students with disabilities in vocational education programs (National Association of State Boards of Education, 1979; Sitlington, 1981). In keeping with this movement, the Carl D. Perkins Vocational Education Act (1984) set aside funds for the inclusion of students with disabilities in vocational education classes and career-vocational services (e.g., vocational assessment).

Furthermore, the NLTS and the growing body of follow-up and follow-along research on the postschool outcomes of students with disabilities document a sobering picture of the employment prospects for students with disabilities on exiting the education system. Vocational education's historical mission and connection to the labor market made it appear to hold special promise for opening the doors of employment success to students with disabilities. This, too, served to heighten awareness and spawned the creation of many new models demonstrating interagency—as well as special education-vocational education—collaboration (see Gill and Edgar, 1990; Siegel, Robert, Greener, Meyer, Halloran, and Gaylord-Ross, 1993; Weisenstein, Stowitschek, and Affleck, 1991).

Until recently, there were only scant data regarding the success of these initiatives with respect to the participation of students with disabilities and other underrepresented groups in vocational education. On the national level, the National High School Transcript Study (NHSTS, Hayward, 1989; Hayward and Wirt, 1989; Hayward, Thorne, and Ha, 1989) provided encouraging evidence that the goals for increased access to vocational education for exceptional populations have been at least partially attained. For example, students with disabilities earned more credits in vocational education than did peers without disabilities. Further, a large majority of those credits were earned in regular vocational education settings. Although the NHSTS could not assess the quality of these programs, students with disabilities earned equal or greater numbers of credits than their peers in most classes that were occupationally specific. The one exception was that dramatically more youth without disabilities earned credits in business and office occupations (Hayward, 1989).

In addition, recent thinking sets vocational education as a much more diverse universe of curricula than a dichotomous variable can represent adequately. Course-taking in vocational education can vary in intensity, subject matter, and coordination with other activities (Hasazi and Cobb, 1988). Youth who pursue a program or sequence of vocational courses may have different prospects compared with those who "dabble" in different survey courses. Occupational sequences or concentrations are series of related classes creating a general skill base in particular areas. These sequences are thought to be most likely to provide skills generalizable to postschool work settings. The NHSTS reported that few youth—either in the general population or with disabilities—took sequences of vocational education (Hayward, 1989). Has the progress in access to vocational education resulted in the pursuit of concentrations or primarily in enrollment in isolated classes?

Further, analyses of early data from the NLTS showed a number of favorable postschool impacts related to participation in occupationally specific vocational education. For example,

participation in both occupational vocational education and work experience programs had direct and positive effects on a number of secondary school and employment outcomes (D'Amico, 1991). Holding constant disability characteristics and individual, household, and school factors, students with disabilities who participated in occupationally specific vocational education were 4 percentage points more likely to have a competitive job after secondary school than peers who did not. In addition, youth who enrolled in such classes were more likely to complete secondary school and less likely to have failed a class (Wagner, 1991).

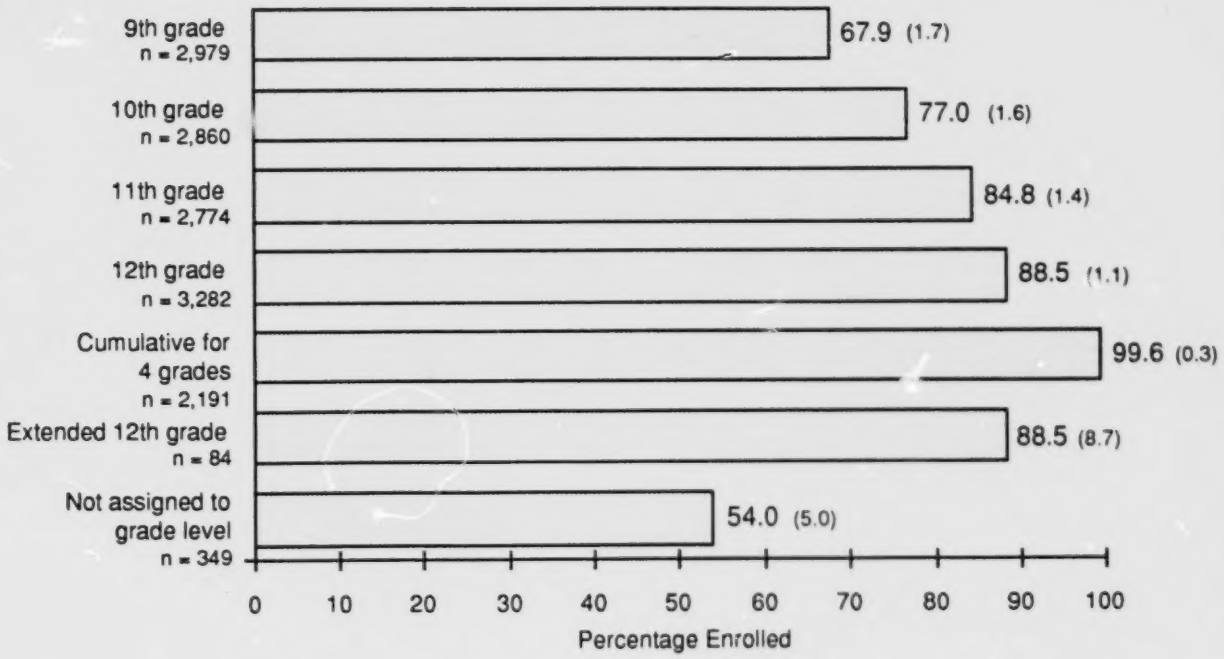
In this chapter, we further our understanding of the participation of students with disabilities in vocational education by addressing several questions:

- To what extent did students with disabilities have access to vocational education at various grade levels?
- Did students with disabilities participate in all types of vocational education uniformly?
- Did students with disabilities concentrate in particular vocational education content areas?
- Did some students with disabilities take more or different kinds of vocational education?
- Did students with disabilities participate in vocational education in regular education settings?

Where possible, we compare our responses to these questions with those of the NHSTS (Hayward, 1989) and other special education research.

Enrollment in Vocational Education

Figure 5-1 depicts the rate at which students with disabilities took at least one vocational education class, by grade level and cumulatively. Clearly, vocational education plays an important role in the experience of secondary education for students with disabilities; nearly all students assigned to a grade level took a vocational education class at some point during their high school careers. Moreover, many students with disabilities appear to have had experiences in vocational education early in high school: 68% of 9th-graders and 77% of 10th-graders took some vocational education. The number of students who participated increased through secondary school; 89% of 12th-graders took at least one vocational course. A similar proportion of youth who participated in extended 12th grade took vocational classes. On the other hand, only 54% of youth not assigned to a grade level took vocational education classes. Figure 5-1 demonstrates that, for students with disabilities, vocational education has expanded beyond its traditional role in secondary education as an elective category available primarily to youth in their final years of high school. It offers some vocationally oriented instruction throughout secondary school.



Standard errors are in parentheses.

Figure 5-1 VOCATIONAL COURSE-TAKING, BY GRADE LEVEL

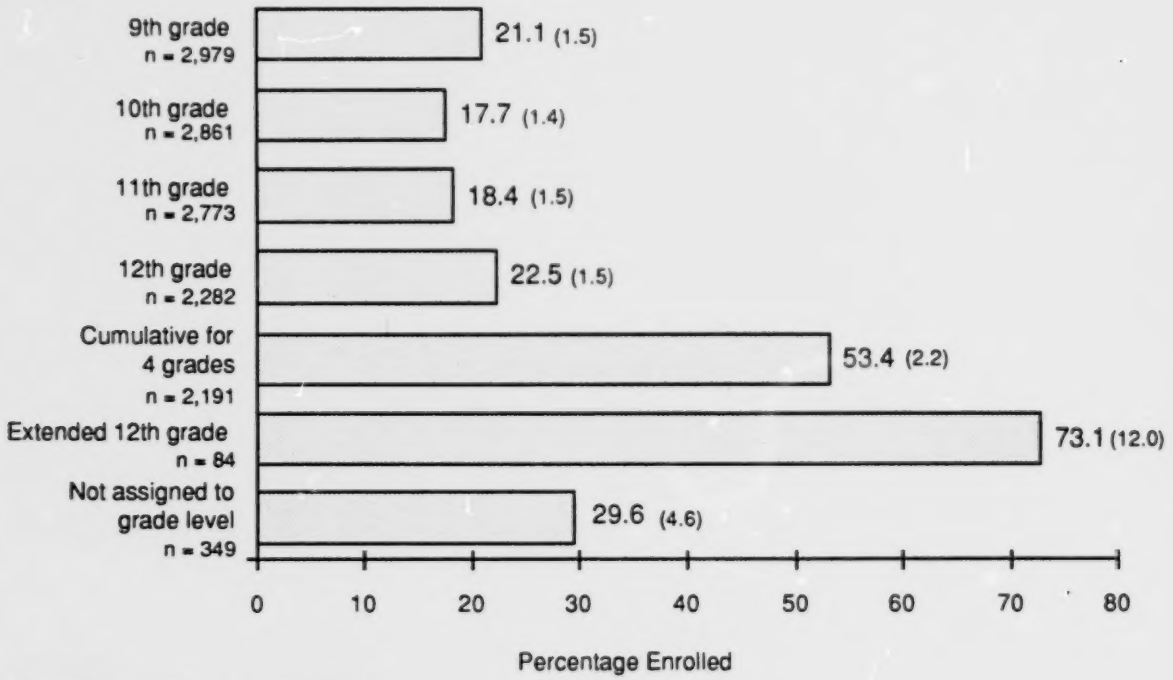
Participation in Prevocational Education

One category of vocational classes is focused on work-related skills, classes that students take as preparation for occupational vocational classes. Some students require instruction relating to the nature of the world of work and careers, job search skills, and job-related social skills before, in lieu of, or in addition to taking classes that develop skills relevant to a particular occupation. In this category of prevocational education, we have included classes that focus on career exploration, career guidance, combinations of academic and life skills curricula with vocational education, as well as community service training, such as serving as a teacher's aide.

Extent of Participation

Figure 5-2 depicts the participation in prevocational education for students with disabilities, by grade level. Cumulatively, 53% of students with disabilities who were assigned to a grade level received some prevocational instruction in grades 9 through 12. The rate at which students took prevocational education varied only slightly across the 4 high school grades. This is surprising in that prevocational education would seem to be a logical stepping stone to more specific types of vocational education, which would suggest that more students would take such classes early in high school and fewer would take them later. Further, the relatively

low rate of participation is surprising given the longer history of prevocational education in special education, long before access to regular vocational programs was an issue (Clark and Kolstoe, 1990; Halpern, 1992). It is possible that prevocational education has developed into a curriculum focus in its own right, rather than being merely a prerequisite to occupational vocational education. Interestingly, youth participating in an extended 12th grade took proportionately more prevocational education than students at any other grade level, while only 29% of their peers not assigned to a grade level took prevocational education.



Standard errors are in parentheses.

Figure 5-2 PREVOCATIONAL EDUCATION COURSE-TAKING, BY GRADE LEVEL

Participation in prevocational education for students in different disability categories who were assigned to a grade level is depicted in Table 5-1. Cumulatively, the rates of participation in prevocational education ranged from 45% for students with visual impairments to 75% for students with multiple handicaps. Deaf students (69%) and students with multiple handicaps (75%) were significantly more likely to have taken prevocational education than peers with learning disabilities (50%), emotional disturbances (48%), visual impairments (45%), or hearing impairments (50%; at least $p<.05$). In general, there were only small fluctuations in this type of course-taking across the 4 years of secondary school.

Table 5-1

PERCENTAGE ENROLLED IN PREVOCATIONAL EDUCATION, BY DISABILITY CATEGORY

Grade Level*	Learning Disabled	Emotionally Disturbed	Speech Impaired	Mentally Retarded	Visually Impaired	Hard of Hearing	Deaf	Orthopedically Impaired	Other Health Impaired	Multiply Handicapped
9th grade	19.3	16.9	16.6	28.9	18.9	20.6	18.3	25.4	31.6	27.0
	(2.2)	(2.8)	(2.8)	(2.9)	(3.1)	(2.7)	(3.7)	(3.2)	(4.2)	(6.3)
n	548	299	282	418	265	387	180	306	200	90
10th grade	14.0	17.5	13.9	26.7	16.7	23.9	27.3	26.1	42.0	43.8
	(1.9)	(2.9)	(2.8)	(2.9)	(3.0)	(2.9)	(4.4)	(3.3)	(4.6)	(6.9)
n	513	281	260	393	265	377	172	289	189	92
11th grade	15.1	17.0	14.0	28.8	14.6	17.8	34.6	24.9	27.9	40.8
	(2.0)	(3.2)	(2.8)	(3.0)	(2.9)	(2.6)	(4.6)	(3.3)	(4.3)	(7.0)
n	527	231	257	375	250	371	178	293	185	88
12th grade	21.0	18.5	21.5	27.9	19.7	24.0	29.3	32.1	31.0	38.7
	(2.1)	(3.0)	(3.0)	(2.7)	(3.0)	(2.7)	(4.0)	(3.3)	(4.4)	(6.7)
n	648	273	311	453	294	430	223	344	194	96
Cumulative for 4 grades	50.4	48.1	46.8	65.8	45.0	50.5	68.9	60.2	64.7	75.0
	(3.2)	(5.0)	(4.4)	(3.8)	(4.4)	(3.6)	(4.8)	(4.1)	(5.3)	(7.0)
n	399	167	215	263	215	322	159	240	137	70

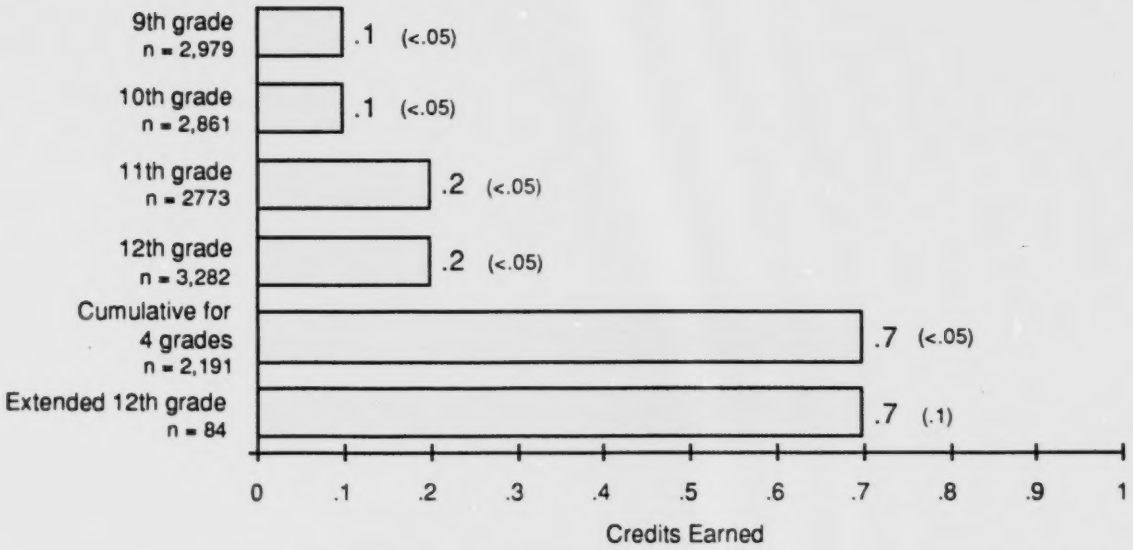
Standard errors are in parentheses.

* There are too few students in extended 12th grade or not assigned to a grade level to disaggregate.

There were no sizable or statistically significant relationships between prevocational course-taking and gender, ethnic background, or socioeconomic status.

Credits Earned in Prevocational Courses

Simple participation in classes is not sufficient for progress through secondary school; students must attain passing grades to accumulate Carnegie units to meet high school graduation requirements. Figure 5-3 shows the number of credits students with disabilities earned in prevocational education at each grade level and cumulatively. The figure indicates further that prevocational education plays a comparatively small role in the secondary school experience of students with disabilities. As a group, students with disabilities earned .7 credits in prevocational courses over 4 years in secondary school, yet they earned an equivalent number of additional credits if they stayed for extended 12th grade. In keeping with their rates of participation, students with disabilities earned few credits in each grade level, although more were earned in the 11th and 12th grades.



Standard errors are in parentheses.
Note: Students not assigned to a grade level are not included because generally they did not earn credits.

Figure 5-3 CREDITS EARNED IN PREVOCATIONAL EDUCATION, BY GRADE LEVEL

Given the comparatively small number of prevocational education credits earned by students overall, we would not expect to see great variation by disability category (Table 5-2). Cumulatively, the number of earned credits ranged from 1.6 credits for students with multiple handicaps to .5 for students with learning disabilities, speech impairments, or visual impairments. Only students with multiple handicaps or mental retardation accrued more than 1 prevocational education credit over 4 years of high school; they earned significantly more credits cumulatively than students in all other disability categories (all comparisons at least $p<.05$).

Neither gender, ethnic background, nor household income appears related to this type of vocational education at any grade level.

Participation in Occupational Vocational Education

Although, all types of vocational education impart skills that are expected to be useful to students in their adult lives, some types of vocational instruction have direct links to postschool participation in the labor market. The distinction between occupational and prevocational vocational education is common in the research on vocational education in general and on the participation of individuals with disabilities in vocational education (Clark and Kolstoe, 1990; Hasazi and Cobb, 1988; Hayward, 1989; Wehman, Kregel, and Seyfarth, 1985). We have defined occupational vocational education to include participation in one or more of 43 courses, including work experience programs, occupational home economics

Table 5-2

AVERAGE CREDITS EARNED IN PREVOCATIONAL COURSES, BY DISABILITY CATEGORY

Grade Level*		Learning Disabled	Emotionally Disturbed	Speech Impaired	Mentally Retarded	Visually Impaired	Hard of Hearing	Deaf	Orthopedically Impaired	Other Health Impaired	Multiply Handicapped
9th grade		.1	.1	.1	.2	.1	.1	.1	.2	.2	.3
		(.0)	(.0)	(.0)	(.0)	(.0)	(.0)	(.0)	(.0)	(.0)	(.1)
	n	548	299	282	418	265	387	180	306	200	90
10th grade		.1	.1	.1	.3	.1	.1	.2	.2	.1	.5
		(.0)	(.0)	(.0)	(.0)	(.0)	(.0)	(.0)	(.0)	(.0)	(.1)
	n	513	281	260	393	265	377	172	289	189	92
11th grade		.1	.1	.1	.3	.1	.1	.3	.1	.2	.5
		(.0)	(.0)	(.0)	(.1)	(.0)	(.0)	(.0)	(.0)	(.0)	(.1)
	n	527	231	257	375	250	371	178	293	185	88
12th grade		.1	.1	.2	.3	.2	.2	.2	.2	.2	.3
		(.0)	(.0)	(.0)	(.0)	(.0)	(.0)	(.0)	(.0)	(.0)	(.1)
	n	648	273	311	453	294	430	223	344	194	96
Cumulative for 4 grades		.5	.6	.5	1.2	.5	.6	.8	.7	.8	1.6
		(.1)	(.1)	(.1)	(.1)	(.1)	(.1)	(.1)	(.1)	(.1)	(.3)
	n	399	167	215	263	215	322	159	240	137	70

Standard errors are in parentheses.

* There are too few students in extended 12th grade or not assigned to a grade level to disaggregate.

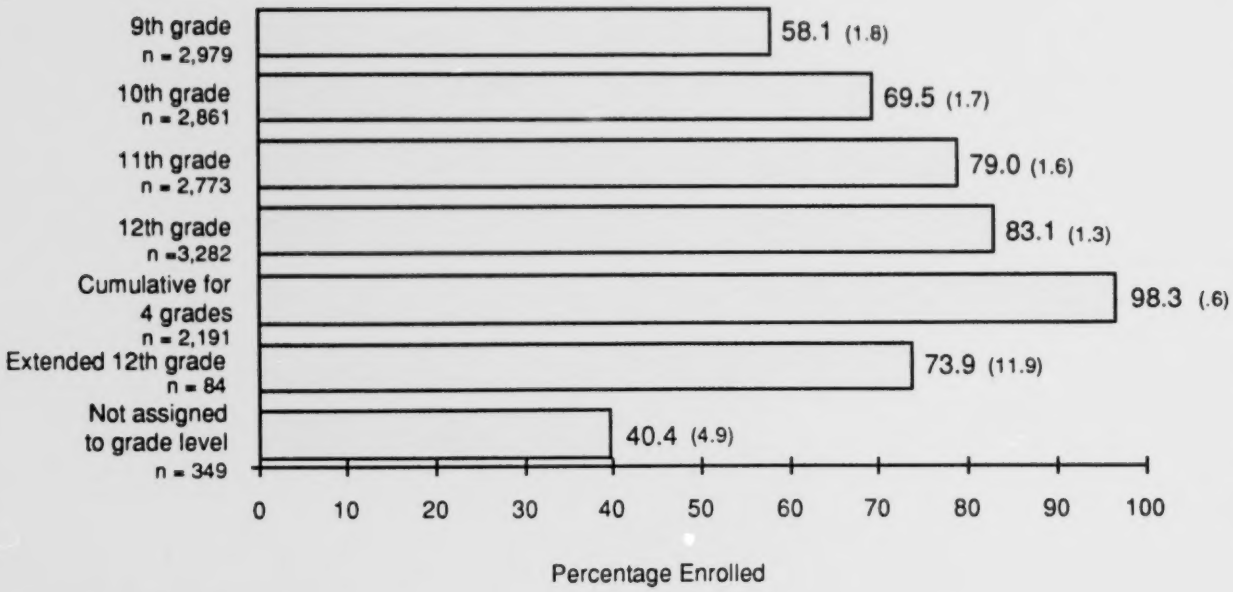
(e.g., child care and development), marketing and distributive education, health occupations, technical education, business and office occupations, and trade and industry.* This scheme is comparable to that used in the NHSTS (Hayward, 1989).

Extent of Participation

Figure 5-4 depicts the extent of participation in occupationally oriented vocational education, by grade level and cumulatively for students with disabilities.† Already in their first year of high school, a majority (58%) of students with disabilities had taken at least one occupational vocational education class. The number of students who were exposed to occupational vocational education increased with each successive year of secondary school.

* The types of courses in each of these broad areas are described more fully later in the chapter.

† The issue of regular vs. special education placement is addressed later in the chapter. However, we conducted analyses of occupational vocational education course-taking in light of placement. They indicated that setting did not change our interpretation; therefore, we present only the aggregated results here.



Standard errors are in parentheses.

Figure 5-4 OCCUPATIONAL VOCATIONAL EDUCATION COURSE-TAKING, BY GRADE LEVEL

In addition, a sizable majority of students in extended 12th grade took occupational vocational education. Cumulatively, nearly all students with disabilities had some kind of occupational vocational education in either regular or special education.

A decade ago, many policymakers were concerned about the lack of access to vocational education for youth with disabilities (Bottoms and Copa, 1983; Cobb and Phelps, 1983; Vocational Education Data Systems, 1983). More recently, Clark and Kolstoe (1990) have advocated for a career development focus throughout the primary and secondary curricula. Our analyses cannot attest to the degree to which secondary curricula for students with disabilities have adequately adopted this focus or that youth with disabilities have "sufficient access" to vocational programs. However, occupational vocational education plays a role in the educational experience for virtually all students with disabilities. Further, many students gain access to these classes early in their high school careers.

But do students in all disability groups have similar exposure to occupational vocational education? Table 5-3 shows that participation varied substantially by disability category and by grade level. For example, the range of participation of 63% (students with learning disabilities) to 35% (students with multiple handicaps) in 9th grade compares with one of 85% (students with learning disabilities) to 68% (students with visual impairments) in 12th grade.

Table 5-3

PERCENTAGE ENROLLED IN OCCUPATIONAL VOCATIONAL EDUCATION, BY DISABILITY CATEGORY

Grade Level*		Learning Disabled	Emotionally Disturbed	Speech Impaired	Mentally Retarded	Visually Impaired	Hard of Hearing	Deaf	Orthopedically Impaired	Other Health Impaired	Multiply Handicapped
9th grade		63.0	53.7	54.6	47.6	47.9	51.5	58.2	43.8	60.0	34.9
		(2.6)	(3.7)	(3.8)	(3.1)	(4.0)	(3.3)	(4.8)	(3.7)	(4.5)	(6.7)
	n	548	299	282	418	265	387	180	306	200	90
10th grade		73.9	58.9	62.8	65.9	50.1	58.7	67.2	50.8	62.5	44.9
		(2.5)	(3.8)	(3.9)	(3.1)	(4.0)	(3.3)	(4.6)	(3.8)	(4.6)	(6.9)
	n	513	281	260	393	265	377	172	289	189	92
11th grade		81.6	73.9	74.9	75.7	62.5	74.0	75.1	69.2	69.9	70.6
		(2.2)	(3.7)	(3.5)	(2.9)	(4.0)	(3.0)	(4.2)	(3.5)	(4.4)	(6.5)
	n	527	231	257	375	250	371	178	293	185	88
12th grade		85.2	83.8	73.0	79.9	68.4	81.9	82.8	73.9	75.6	74.2
		(1.8)	(2.9)	(3.3)	(2.5)	(3.6)	(2.4)	(3.3)	(3.1)	(4.1)	(6.0)
	n	648	273	311	453	294	430	223	344	194	96
Cumulative for 4 grades		98.7	97.8	96.6	96.8	92.0	96.2	99.2	96.2	95.7	96.5
		(.7)	(1.4)	(1.6)	(1.4)	(2.4)	(1.4)	(.9)	(1.6)	(2.2)	(2.9)
	n	399	167	215	263	215	322	159	240	137	70

Standard errors are in parentheses.

* There are too few students in extended 12th grade or not assigned to a grade level to disaggregate.

In each year of secondary school, students with learning disabilities were significantly more likely to enroll in occupational vocational education than were peers in most other disability categories. The exception to this observation is relative parity among students with learning disabilities and were peers with mental retardation, emotional disturbances, and hearing impairments in the later years of high school.

Increases in the number of students receiving occupational vocational instruction with increasing grade levels are apparent for students in nearly all disability categories. The range of increase spanned 15 percentage points for students with other health impairments to nearly 40 points for students with multiple handicaps. These increases accumulated such that nearly all students in all disability categories had had some exposure to occupational vocational education in high school. The finding of increasing participation in vocational education in the final years of secondary school reflects the traditional role of vocational education as an elective part of the curriculum available to juniors and seniors.

There is also variation in occupational vocational education course-taking with respect to demographic characteristics (Table 5-4). When viewed cumulatively, neither gender, ethnic group membership, nor household income appears to be associated with this type of vocational education course-taking. However, the analysis of course-taking at different grade levels suggests that some differences that are present early in high school lessen considerably in later years, whereas others remain stable. For example, male students with disabilities took occupational vocational education in significantly greater numbers than their female peers in the first year of high school (63% vs. 48%, $p<.001$). This difference lessened in 11th grade and essentially disappeared in 12th grade. Perhaps these findings are explained by the fact that occupationally oriented vocational education, through either curricular tracking or personal choice, traditionally has been attended by males. Thus, males may gain access to occupational vocational education earlier in high school than their female peers.

Table 5-4

PERCENTAGE ENROLLED IN OCCUPATIONAL VOCATIONAL EDUCATION BY DEMOGRAPHIC CHARACTERISTICS

	Gender		Ethnic Background			Household Income		
Grade Level*	Male	Female	White	African American	Hispanic	<$12,000	$12,000-$25,000	>$25,000
9th grade	62.9	47.8	63.3	45.6	57.7	52.1	57.6	61.6
	(2.2)	(3.2)	(2.3)	(4.3)	(7.2)	(4.2)	(3.9)	(3.1)
n	1,821	1,155	1,686	520	305	563	654	1,105
10th grade	73.6	60.7	72.5	60.9	66.6	66.6	74.0	68.5
	(2.0)	(3.2)	(2.2)	(4.3)	(7.1)	(4.1)	(3.5)	(2.9)
n	1,758	1,101	1,627	501	291	531	630	1,078
11th grade	81.1	74.3	79.1	78.0	83.5	81.2	80.3	77.7
	(1.8)	(3.0)	(2.0)	(4.0)	(5.8)	(3.4)	(3.3)	(2.6)
n	1,687	1,082	1,634	448	276	514	618	1,084
12th grade	82.9	83.7	83.8	79.3	80.3	82.9	83.9	82.9
	(1.6)	(2.3)	(1.7)	(3.6)	(6.1)	(3.2)	(2.8)	(2.2)
n	1,980	1,298	1,963	516	292	571	703	1,316
Cumulative for 4 grades	98.3	97.6	98.2	96.6	98.2	98.7	97.6	98.0
	(.7)	(1.2)	(.7)	(2.0)	(2.4)	(1.2)	(1.4)	(1.0)
n	1,319	872	1,337	347	215	390	487	903
Extended 12th grade	86.6	63.0	--	--	--	--	--	--
	(11.8)	(19.8)						
n	51	33						

Standard errors are in parentheses.

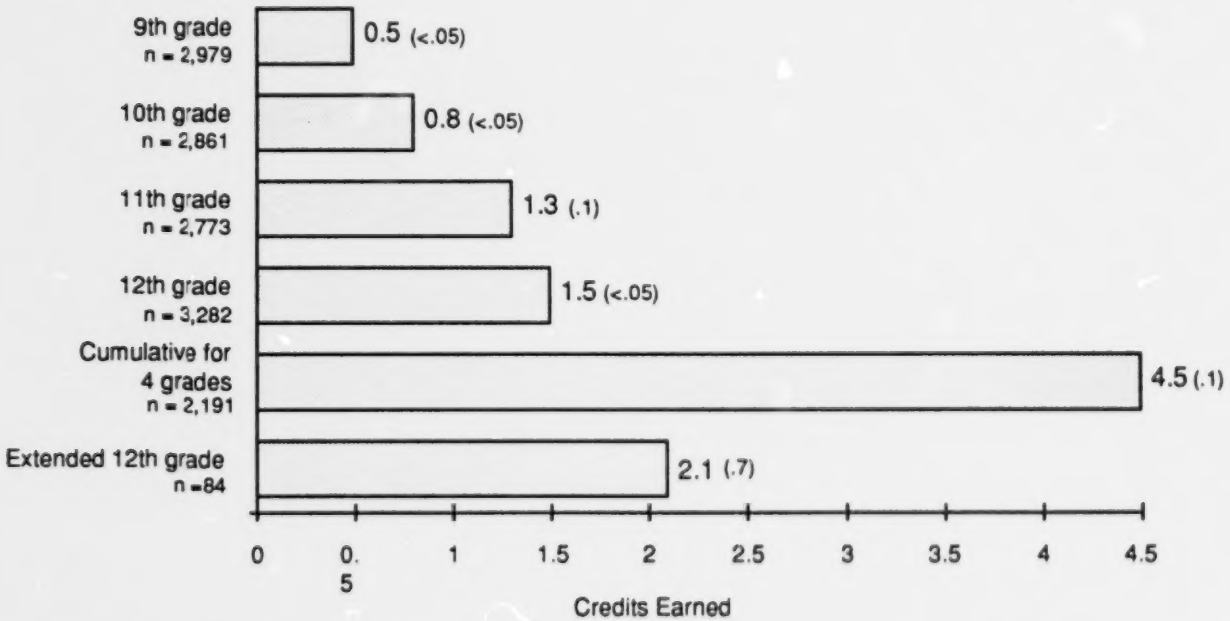
* There are too few students not assigned to a grade level to disaggregate.

Ethnic group membership exhibits similar variation in occupational course-taking over the course of secondary school. Although similar from a cumulative perspective, significantly more white students than African American peers received occupational instruction in both the 9th and 10th grades (all comparisons at least $p<.05$). Differences were much smaller in the later years of high school. A possible explanation of the differences across ethnic backgrounds could relate to the schools that the students attended (i.e., white students may have attended wealthier schools with broader curricular options) or to placement practices regarding students of different ethnic backgrounds.

It is interesting that, unlike gender and ethnic group membership, household income—often an important factor in educational research—demonstrates no consistent pattern of relationship to occupational vocational education course-taking. There are few significant differences in vocational course-taking, either cumulatively or at specific grade levels.

Credits Earned in Occupational Vocational Education

It is clear that nearly all students with disabilities have some exposure to occupational vocational education during their high school experiences. The question remains, however, as to the relative role of vocational education in students' overall secondary education. Figure 5-5



Standard errors are in parentheses.

Figure 5-5 CREDITS EARNED IN OCCUPATIONAL VOCATIONAL EDUCATION, BY GRADE LEVEL

depicts the number of credits earned by students with disabilities as a group—participating and nonparticipating students are included in these summaries. Cumulatively, students with disabilities earned 4.5 credits in occupational vocational education. This rate is one credit greater than that found by the NHSTS (Hayward, 1989). This difference may be a result of differences in the disability categories represented in the two studies. Mirroring the rates of participation, students with disabilities earned increasing numbers of credits in each successive year of high school. The vocational focus of the extended 12th grade is also evident by the high number of credits earned by participating students in that grade.

This pattern of earned credits reflecting closely the rates of participation also is present if we examine the credits earned by disability category (Table 5-5). Cumulatively, the number of credits earned ranged from 4.6 for students with learning disabilities or mental retardation to 2.7 for students with visual impairments. Students with learning disabilities or mental retardation accrued significantly more credits than hard of hearing students (3.7), deaf students (3.7), or students with speech (3.9), other health (3.4), orthopedic (3.2), or visual impairments (2.7; all comparisons at least $p<.05$).

Table 5-5

AVERAGE CREDITS EARNED IN OCCUPATIONAL VOCATIONAL EDUCATION, BY DISABILITY CATEGORY

Grade Level*		Learning Disabled	Emotionally Disturbed	Speech Impaired	Mentally Retarded	Visually Impaired	Hard of Hearing	Deaf	Orthopedically Impaired	Other Health Impaired	Multiply Handicapped
9th grade		.6	.4	.5	.4	.4	.5	.5	.4	.5	.3
		(.0)	(.0)	(.0)	(.0)	(.0)	(.0)	(.1)	(.0)	(.1)	(.1)
	n	548	299	282	418	265	387	180	306	200	90
10th grade		.9	.6	.7	.8	.5	.6	.8	.5	.6	.6
		(.1)	(.1)	(.1)	(.1)	(.1)	(.1)	(.1)	(.1)	(.1)	(.2)
	n	513	281	260	393	265	377	172	289	189	92
11th grade		1.3	1.1	1.0	1.5	.8	1.1	1.1	1.0	.9	1.1
		(.1)	(.1)	(.1)	(.1)	(.1)	(.1)	(.1)	(.1)	(.1)	(.2)
	n	527	231	257	375	250	371	178	293	185	88
12th grade		1.5	1.5	1.4	1.5	1.0	1.4	1.3	1.2	1.2	1.4
		(.1)	(.1)	(.1)	(.1)	(.1)	(.1)	(.1)	(.1)	(.1)	(.2)
	n	648	273	311	453	294	430	223	344	194	96
Cumulative for 4 grades		4.6	3.9	3.9	4.6	2.7	3.7	3.7	3.2	3.4	3.6
		(.2)	(.3)	(.2)	(.2)	(.2)	(.2)	(.3)	(.2)	(.3)	(.5)
	n	399	167	215	263	215	322	159	240	137	70

Standard errors are in parentheses.

* There are too few students in extended 12th grade or not assigned to a grade level to disaggregate.

As was the case with participation rates, students in all disability categories earned increasing numbers of credits at each successive grade level. By 12th grade, students in each category earned between .6 and 1.1 credits more than students in their first year of high school. In 9th grade, students with disabilities earned an average of .5 credits—ranging from .6 credits for students with learning disabilities to .3 for students with multiple handicaps. Credits earned in subsequent years ranged from .5 to 1.5, with visually impaired students earning the fewest credits overall. This is logical in that students with visual impairments simply did not participate extensively in this domain and earned large numbers of credits in academic classes (see Chapter 4).

The variation in earned credits in occupational vocational course-taking by demographic characteristics is illustrated in Table 5-6. These findings mirror the participation findings at each grade level, but differ when viewed from the cumulative perspective. For example, male

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Table 5-6

AVERAGE CREDITS EARNED IN OCCUPATIONAL VOCATIONAL EDUCATION, BY DEMOGRAPHIC CHARACTERISTICS

	Gender		Ethnic Background			Household Income		
Grade Level*	Male	Female	White	African American	Hispanic	<$12,000	$12,000-$25,000	>$25,000
9th grade	.6	.4	.6	.4	.5	.5	.5	.6
	(.0)	(.0)	(.0)	(.1)	(.1)	(.1)	(.1)	(.0)
n	1,821	1,155	1,686	520	305	563	654	1,105
10th grade	.9	.6	.9	.6	.8	.8	.8	.8
	(.0)	(.1)	(.0)	(.1)	(.2)	(.1)	(.1)	(.1)
n	1,758	1,101	1,627	501	291	531	630	1,078
11th grade	1.4	1.1	1.4	1.2	1.1	1.3	1.3	1.3
	(.1)	(.1)	(.1)	(.1)	(.2)	(.1)	(.1)	(.1)
n	1,687	1,082	1,634	448	276	514	618	1,084
12th grade	1.6	1.4	1.6	1.2	1.4	1.5	1.4	1.5
	(.1)	(.1)	(.1)	(.1)	(.2)	(.1)	(.1)	(.1)
n	1,980	1,298	1,963	516	292	571	703	1,316
Cumulative for 4 grades	4.8	3.7	4.8	3.5	3.9	4.3	4.4	4.5
	(.2)	(.2)	(.2)	(.3)	(.4)	(.3)	(.3)	(.2)
n	1,319	872	1,337	347	215	390	487	903
Extended 12th grade	2.9	1.4						
	(1.1)	(.7)						
n	51	33						

Standard errors are in parentheses.

* There are too few students not assigned to a grade level to disaggregate.

students earned a significantly greater number of credits than female peers at each grade level up to 12th grade, as well as in extended 12th grade (each comparison at least $p<.05$). In addition, cumulatively, males accrued approximately 1 credit more than female classmates (4.8 vs. 3.7, $p<.001$). This implies that, although similar numbers of both genders were exposed to occupational vocational education, male students with disabilities took more classes or, alternatively, failed fewer classes. A similar pattern is visible with ethnic group membership. White students earned more credits than African American or Hispanic peers at each grade level (significant for African American and white students in 9th, 10th, and 11th grades). Cumulatively, the 4.8 credits acquired by white students exceeded those acquired by African American and Hispanic peers by more than 1 credit (all comparisons at least $p<.05$). As was the case in rates of participation, household income does not appear to relate to the number of credits earned in occupational vocational education.

The Content of Occupational Vocational Education

A wide variety of vocational classes can be thought of as occupational in nature, with a great diversity of topics within the group. Auto shop and keyboarding are clearly occupational in nature, but teach different skills and relate to different sectors of the labor market. What kinds of occupational instruction did students with disabilities receive? To address this issue, we assess the degree of participation and the number of credits earned in seven vocational areas. We begin with a brief description of each. The reader should note that some content areas of vocational education have many course offerings associated with them (e.g., trade and industry), whereas others have only a few (e.g., health occupations); thus, students have greater opportunities to take courses in the former areas. It is important to keep this issue in mind as we discuss the relative levels of participation in the content areas of vocational education.

- **Agricultural vocational education** offers students classes addressing all areas relating to farming, including farm production, transportation, and organization, as well as landscaping, horticulture, natural resource conservation and management, and parks and recreation studies.
- **Marketing and distributive education** focuses on the processes of bringing products to the market and finding consumers to buy them. The principal curricular areas are retailing, wholesaling, marketing, and financing. However, additional topics in this area include cosmetology, hotel and restaurant work, as well as other service occupations.
- **Health occupations** instructs students to perform various supporting roles in the health care professions, such as nurse's or geriatric aides, or dental assistants. Course content might include radiology, environmental health care, or rehabilitation technologies.
- **Occupational home economics** is a diverse cluster of courses that may prepare students to work in a variety of professions: child care, food production, apparel and textiles, housing and interior design, as well as building and grounds maintenance and custodial work. Consequently, the curriculum may cover diverse areas such as child development, sewing, cooking, design, and institutional management.

- **Business and office occupations** prepares students for employment in various facets of office operations. The subject matter relevant to these classes includes data processing, word processing, accounting, typing and keyboarding, and shorthand, as well as the use of various types of office technology. There also may be academic courses in English or math focused on the requirements of these particular work environments.
- **Technical education** offers students technical skills that might be applicable in a wide variety of contexts in today's labor market. Some areas include computer science, computer literacy, computer programming, and engineering, as well as the technical aspects of communications technologies in radio, television, and film.
- **Trade and industry** is the category of vocational education with the largest number of course offerings, which could potentially lead to a diverse array of occupations. It includes instruction in industrial arts (e.g., general shop, electricity, machine shop), construction trades (e.g., plumbing, wiring, painting, carpentry, masonry), mechanics (e.g., auto repair, auto body, computer repair, etc.), and precision production (e.g., drafting, graphics, welding, and cabinetry).

Table 5-7 depicts the percentage of students enrolled and the number of credits earned in the various vocational education content areas, by grade level and cumulatively. There are substantial differences in the rates of enrollment. First, cumulatively, significantly larger numbers of students with disabilities took courses in trade and industry (59%), technical education (63%), and office occupations (58%) than in agriculture (18%), marketing (10%), health occupations (2%), or home economics (28%; all comparisons $p<.001$). This pattern is repeated for each of the 4 years of secondary school. Second, as one might expect from the increases in participation in occupational vocational education over time, there is growth in the number of students participating in each of the vocational education content areas. The degree of increase between 9th and 12th grades varied from 2 percentage points in agriculture to 12 percentage points in home economics. These changes over time probably reflect a combination of course-taking opportunities, the times during high school that students have access to them, and choice of courses by students, their parents, and their teachers. In addition, students may have completed the minimum course requirements in other curricular areas, allowing them greater numbers of choices of elective courses in later years.

The credits earned by students with disabilities in the various content areas in each grade level and cumulatively also are shown in Table 5-7. The cumulative number of credits earned further indicate the tendency for students to take courses in office occupations, technical education, and trade and industry, as opposed to the other vocational content areas. However, it shows further that young adults with disabilities earned twice as many credits in trade and industry classes as in any other area. This finding is evident at each grade level. This suggests both that more students with disabilities took trade and industry classes and that students took more of those courses than courses in some other areas.

The cumulative numbers of credits in the various content areas allow for a comparison to the NHSTS (Hayward, 1989). There are some differences between the two studies in these

Table 5-7

ENROLLMENT AND CREDITS EARNED BY STUDENTS WITH DISABILITIES IN VOCATIONAL EDUCATION CONTENT AREAS, BY GRADE LEVEL, BY GRADE LEVEL

	9th Grade	10th Grade	11th Grade	12th Grade	Cumulative	Extended 12th Grade
Percentage of students taking						
Agriculture	7.8 (1.0)	9.3 (1.1)	9.0 (1.1)	9.5 (1.0)	17.9 (1.7)	.8 (2.4)
Marketing	.7 (.3)	2.2 (.6)	4.3 (.8)	7.7 (.9)	10.2 (1.4)	2.9 (4.6)
Health occupations	.4 (.2)	.5 (.3)	1.5 (.5)	1.4 (.4)	2.4 (.7)	.0 –
Home economics	4.0 (.7)	8.6 (1.1)	11.9 (1.2)	15.7 (1.3)	28.3 (2.0)	18.1 (10.4)
Office occupations	19.3 (1.5)	23.4 (1.6)	22.5 (1.6)	26.2 (1.6)	57.9 (2.2)	30.0 (12.4)
Technical education	22.8 (1.5)	26.9 (1.7)	28.5 (1.7)	29.1 (1.6)	63.2 (2.2)	30.3 (12.5)
Trade and industry	31.5 (1.7)	36.4 (1.8)	36.3 (1.8)	35.8 (1.7)	59.4 (2.2)	23.5 (11.5)
Average credits earned in:						
Agriculture	.1 (.0)	.1 (.0)	.1 (.0)	.1 (.0)	.4 (.1)	.0 –
Marketing	.0 (.0)	.0 (.0)	.1 (.0)	.1 (.0)	.2 (.0)	.0 –
Health occupations	.0 (.0)	.0 (.0)	.0 (.0)	0 (.0)	.1 (.0)	.0 –
Home economics	.0 (.0)	.1 (.0)	.1 (.0)	.2 (.0)	.5 (.1)	.3 (.3)
Office occupations	.1 (.0)	.2 (.0)	.2 (.0)	.2 (.0)	.8 (.1)	.3 (.1)
Technical education	.1 (.0)	.2 (.0)	.2 (0.0)	.3 (.0)	1.0 (.1)	.3 (.1)
Trade and industry	.3 (.0)	.4 (.0)	.6 (.0)	.6 (.0)	1.9 (.1)	.2 (.2)
n	2,979	2,860	2,774	3,282	2,190	84

Standard errors are in parentheses.

comparisons. For example, the NHSTS data address graduates, whereas the data presented here focus on students who had 4 years of courses but who were not required to be graduates. In addition, students could have spent more than a single year in a particular grade or grades, increasing the number of opportunities to take vocational classes. Nonetheless, the number of credits reported by the NHSTS and the NLTS are similar in agriculture, marketing, health occupations, home economics, and trade and industry. The two studies differ in reports of credits earned in business and office occupations (.4 vs. .8), and technical education

(.02 vs. 1.0). It is possible that these differences are due to differences between the samples or in coding procedures, or that students with disabilities indeed earned more credits in those two content areas.

Cumulative rates of participation and credits earned in the various content areas by disability category are depicted in Table 5-8. The cumulative rates of participation vary considerably between disability categories. First, although students with learning disabilities took occupational vocational education at the highest rate overall, this is true for individual content areas only in trade and industry and marketing. Second, in all the content areas,

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Table 5-8

CUMULATIVE ENROLLMENT AND CREDITS EARNED IN VOCATIONAL EDUCATION CONTENT AREAS, BY DISABILITY CATEGORY

	Learning Disabled	Emotionally Disturbed	Speech Impaired	Mentally Retarded	Visually Impaired	Hard of Hearing	Deaf	Orthopedically Impaired	Health Impaired	Multiply Handicapped
Percentage of students taking:										
Agriculture	18.2 (2.5)	14.3 (3.5)	13.2 (3.0)	22.6 (3.3)	5.3 (2.0)	9.9 (2.2)	6.0 (2.5)	8.9 (2.4)	10.5 (3.4)	8.9 (4.6)
Marketing	11.5 (2.0)	10.7 (3.1)	10.0 (2.6)	6.6 (2.0)	5.0 (1.9)	6.0 (1.7)	3.1 (1.8)	9.0 (2.4)	6.6 (2.7)	4.7 (3.4)
Health occupations	1.4 (.8)	1.8 (1.3)	5.2 (1.9)	5.2 (1.8)	4.4 (1.8)	2.9 (1.2)	4.3 (2.1)	4.5 (1.7)	5.6 (2.5)	2.9 (2.7)
Home economics	26.2 (2.8)	26.4 (4.4)	24.9 (3.8)	39.2 (3.9)	25.3 (3.8)	24.9 (3.1)	22.2 (4.3)	27.9 (3.8)	24.4 (4.7)	17.3 (6.1)
Office occupations	61.5 (3.1)	60.0 (4.9)	64.3 (4.2)	39.3 (3.9)	71.1 (4.0)	69.4 (3.3)	69.9 (4.7)	58.9 (4.1)	70.4 (5.0)	41.2 (7.9)
Technical education	66.7 (3.0)	65.5 (4.7)	71.6 (4.0)	43.9 (3.9)	80.3 (3.5)	75.3 (3.1)	77.0 (4.3)	71.5 (3.8)	72.3 (4.9)	50.8 (8.0)
Trade and industry	63.1 (3.1)	61.4 (4.9)	54.0 (4.4)	52.2 (4.0)	32.8 (4.2)	49.8 (3.6)	58.2 (5.1)	28.1 (3.8)	42.0 (5.5)	36.0 (7.7)
Average credits earned in:										
Agriculture	.5 (.1)	.3 (.1)	.2 (.1)	.5 (.1)	.1 (.0)	.2 (.1)	.1 (.1)	.1 (.0)	.2 (.1)	.5 (.4)
Marketing	.2 (.0)	.3 (.1)	.2 (.1)	.1 (.1)	.1 (.1)	.1 (.0)	.1 (.0)	.2 (.1)	.2 (.1)	.2 (.2)
Health occupations	.0 (.0)	.1 (.1)	.1 (.0)	.1 (.1)	.1 (.0)	.0 (.0)	.1 (.1)	.1 (.0)	.1 (.0)	.0 (.0)
Home economics	.4 (.1)	.3 (.1)	.3 (.1)	.9 (.1)	.3 (.1)	.4 (.1)	.3 (.1)	.4 (.1)	.2 (.1)	.3 (.2)
Office occupations	.9 (.1)	.7 (.1)	1.0 (.1)	.5 (.1)	1.1 (.1)	1.2 (.1)	1.0 (.1)	.9 (.1)	1.0 (.2)	.5 (.1)
Technical education	1.1 (.1)	1.0 (.1)	1.2 (.1)	.6 (.1)	1.3 (.1)	1.2 (.1)	1.0 (.1)	1.3 (.1)	1.2 (.2)	.6 (.2)
Trade and industry	2.2 (.2)	1.7 (.2)	1.4 (.2)	1.5 (.2)	.6 (.1)	1.3 (.2)	1.1 (.2)	.6 (.1)	.8 (.2)	.5 (.2)
n	399	167	215	263	215	322	159	240	137	70

Standard errors are in parentheses.

students with multiple handicaps were exposed to occupational vocational education less than their peers in other disability categories. Third, students in different disability categories focused their vocational course-taking in different content areas. For example, students with mental retardation enrolled in agriculture (23%), health occupations (5%), and home economics (39%) in greater numbers than did peers in most other disability categories. On the other hand, comparatively small numbers of students with mental retardation took office occupations (39%) or technical education (44%). These courses were taken in the greatest numbers by students with visual impairments (71% and 80%), hard of hearing students (69% and 75%), deaf students (70% and 77%), and other health impaired students (70% and 72%).

Findings regarding the cumulative numbers of credits earned by students in different disability categories in the seven vocational education content areas largely parallel those of the cumulative rates of participation. That is, students with learning disabilities and their peers with mental retardation earned more credits in agriculture than did their peers in other disability categories. Students with multiple handicaps earned the fewest credits in health occupations, technical education, and trade and industry. Further, in trade and industry, students with learning disabilities and emotional disturbances earned significantly more credits than did peers in most other disability categories (2.2 and 1.7 vs. .5 to 1.4, $p<.05$). In general, this suggests that these two groups of students not only took trade and industry in greater numbers but also took more classes in that area. The relative difference between students with learning disabilities and peers with emotional disturbances may arise from differences in the number of failing grades that are received by those with emotional disturbances.

When we consider vocational credits earned by a group of students overall, the experiences of the students who enroll in a course and those who do not are blended. Although this gives an accurate picture of credits earned by the group as a whole, it does not clearly depict the importance of vocational education for students who take vocational courses. In other words, when only a minority of students take a type of class, their credit averages include the majority of students who received no credits in that area. Thus, although the overall credit averages may be quite low, the minority of students taking the classes may actually earn a high number of credits from those courses.

The relative emphasis on different content areas among students who took courses in a particular area is depicted in Table 5-9. As expected, the average number of credits earned increases for students in all categories when only enrolled students are considered. Further, although trade and industry is the area in which most students earned their vocational credits, the difference between it and the other vocational areas is not as great when only enrolled students are considered. In addition, we see that students in different categories concentrated their vocational course-taking in different areas. For example, students with learning disabilities who took trade and industry courses earned credits in that area for almost four full courses (3.7 credits), compared with fewer than 3 credits in any other area. In contrast, peers with visual impairments earned about equal numbers of credits in a variety of content areas in

Table 5-9

CUMULATIVE CREDITS EARNED FOR THOSE WHO TOOK VOCATIONAL EDUCATION, BY DISABILITY CATEGORY

	Learning Disabled	Emotionally Disturbed	Speech Impaired	Mentally Retarded	Visually Impaired	Hard of Hearing	Deaf	Orthopedically Impaired	Other Health Impaired	Multiply Handicapped
Agriculture	2.9	--	--	2.3	--	--	--	--	--	--
	(.4)			(.3)						--
n	68	24	24	55	10	29	8	19	13	6
Marketing	2.0	--	--	--	--	--	--	--	--	--
	(.3)									
n	40	17	22	16	11	19	5	20	9	3
Health occupations	--	--	--	--	--	--	--	--	--	--
n	5	3	11	12	7	8	7	8	6	2
Home economics	1.6	1.4	1.4	2.7	1.2	1.6	1.5	1.6	1.0	--
	(.2)	(.3)	(.3)	(.3)	(.2)	(.3)	(.4)	(.3)	(.2)	
n	91	36	49	89	50	72	35	60	30	12
Office occupations	1.7	1.4	1.6	1.3	1.7	1.8	1.5	1.7	1.6	1.5
	(.1)	(.2)	(.2)	(.1)	(.1)	(.1)	(.2)	(.2)	(.2)	(.3)
n	214	87	128	96	146	212	104	132	88	26
Technical education	1.7	1.7	1.8	1.4	1.8	1.7	1.5	1.9	1.7	1.5
	(.1)	(.2)	(.2)	(.2)	(.1)	(.1)	(.2)	(.2)	(.2)	(.2)
n	238	95	145	105	165	227	112	164	92	32
Trade and industry	3.7	2.9	2.7	3.2	1.7	2.8	2.0	2.1	2.0	--
	(.2)	(.3)	(.3)	(.3)	(.3)	(.3)	(.2)	(.3)	(.3)	
n	237	95	111	125	68	145	87	67	55	

Standard errors are in parentheses.
Data are reported separately only for categories with at least 25 students.

which they enrolled. Students with mental retardation earned more credits in home economics than did other students.

We reported earlier in this chapter that gender and ethnic background appeared to be related to differential participation in occupational vocational education. However, that variation is not uniform across the seven vocational education content areas (Table 5-10). Males had large enrollment advantages only in agriculture (23% vs. 9%, $p<.001$) and trade and industry (76% vs. 25%, $p<.001$). Female students proportionately took more vocational content courses than their male peers in virtually every remaining course category: health occupations (6% vs. <1%, $p<.001$), home economics (52% vs. 17%, $p<.001$), office occupations (72% vs. 51%, $p<.001$), and technical education (73% vs. 58%, $p<.001$). These results closely parallel those in the NHSTS (Hayward and Wirt, 1989). Certainly, this finding is not surprising given traditional course-taking norms whereby "boys take shop" and "girls take home economics." This may also be a result of IEP planning, tracking, tradition, or personal

choice. In any event, the section of Table 5-10 showing credits earned clearly shows that in those categories in which males outnumber females, the differences are large—a factor of six. Many more males took those classes, and they took more of them. A difference of that magnitude favoring females is present only in home economics.

Table 5-10

CUMULATIVE ENROLLMENT AND CREDITS EARNED IN VOCATIONAL EDUCATION CONTENT AREAS, BY DEMOGRAPHIC CHARACTERISTICS

	Gender		Ethnic Background			Household Income		
	Male	Female	White	African American	Hispanic	<$12,000	$12,000-$25,000	>$25,000
Percentage of students taking:								
Agriculture	22.3 (2.3)	8.6 (2.2)	19.9 (2.2)	16.1 (4.0)	6.4 (4.5)	17.7 (4.0)	20.3 (3.7)	18.7 (2.8)
Marketing	8.6 (1.5)	13.6 (2.7)	10.2 (1.7)	14.6 (3.9)	2.9 (3.1)	10.7 (3.3)	9.6 (2.7)	11.7 (2.3)
Health occupations	.5 (.4)	6.4 (1.9)	2.1 (.8)	4.1 (2.2)	3.7 (3.4)	3.3 (1.9)	2.8 (1.5)	2.2 (1.0)
Home economics	16.8 (2.0)	52.2 (3.9)	27.5 (2.5)	25.9 (4.8)	33.0 (8.6)	25.7 (4.6)	21.4 (3.8)	21.4 (3.3)
Office occupations	51.1 (2.7)	72.3 (3.5)	62.3 (2.7)	49.1 (5.5)	34.1 (8.7)	49.0 (5.3)	58.0 (4.6)	62.4 (3.4)
Technical education	58.4 (2.7)	73.2 (3.5)	66.9 (2.6)	52.9 (5.5)	50.1 (9.2)	56.0 (5.2)	64.1 (4.5)	66.8 (3.4)
Trade and industry	76.0 (2.3)	24.9 (3.4)	62.8 (2.7)	49.9 (5.5)	62.3 (8.9)	61.2 (5.1)	61.9 (4.5)	57.5 (3.5)
Average credits earned in:								
Agriculture	.6 (.1)	.1 (.0)	.5 (.1)	.2 (.1)	.2 (.1)	.5 (.1)	.6 (.2)	.4 (.1)
Marketing	.1 (.0)	.3 (.1)	.2 (.0)	.3 (.1)	.1 (.2)	.2 (.1)	.2 (.1)	.2 (.1)
Health occupations	.0 (.0)	.2 (.1)	.0 (.0)	.1 (.1)	.1 (.1)	.1 (.1)	.0 (.0)	.1 (.0)
Home economics	.2 (.1)	.9 (.1)	.4 (.1)	.5 (.2)	.3 (.1)	.5 (.2)	.3 (.1)	.5 (.1)
Office occupations	.6 (.1)	1.3 (.1)	.9 (.1)	.6 (.1)	.5 (.2)	.6 (.1)	.7 (.1)	1.0 (.1)
Technical education	.8 (.1)	1.4 (.1)	1.1 (.1)	.8 (.1)	.8 (.2)	.8 (.1)	.9 (.1)	1.1 (.1)
Trade and industry	2.6 (.2)	.4 (.1)	2.1 (.2)	1.2 (.2)	1.7 (.4)	1.7 (.2)	2.0 (.2)	1.8 (.2)
n	1,980	1,298	1,963	516	292	571	703	1,316

Standard errors are in parentheses.

Although less dramatic than the differences related to gender, the relationship between ethnic background and variation in vocational course-taking is complex. First, white students took occupational vocational education in greater numbers and earned more credits in those classes than did their African American peers in four of the seven course content areas: agriculture, office occupations, technical education, and trade and industry. On the other hand, African American students earned the most credits in home economics and marketing classes. Hispanic students earned the fewest credits in most course categories with the exception of health occupations, technical education, and trade and industry. The number of credits earned by these groups of young adults indicates that white students take more occupational vocational classes—particularly in trade and industry courses.

The income of a student's family had little to do with overall course-taking in occupational vocational education. This observation largely holds true for the individual vocational content areas, with two notable exceptions. Students from families earning more than $25,000 annually earned significantly more credits than did peers from families earning less than $12,000 in the traditional white-collar preparation areas: office occupations (1.0 vs. .6, $p<.01$) and technical education (1.1 vs. .8, $p<.05$)

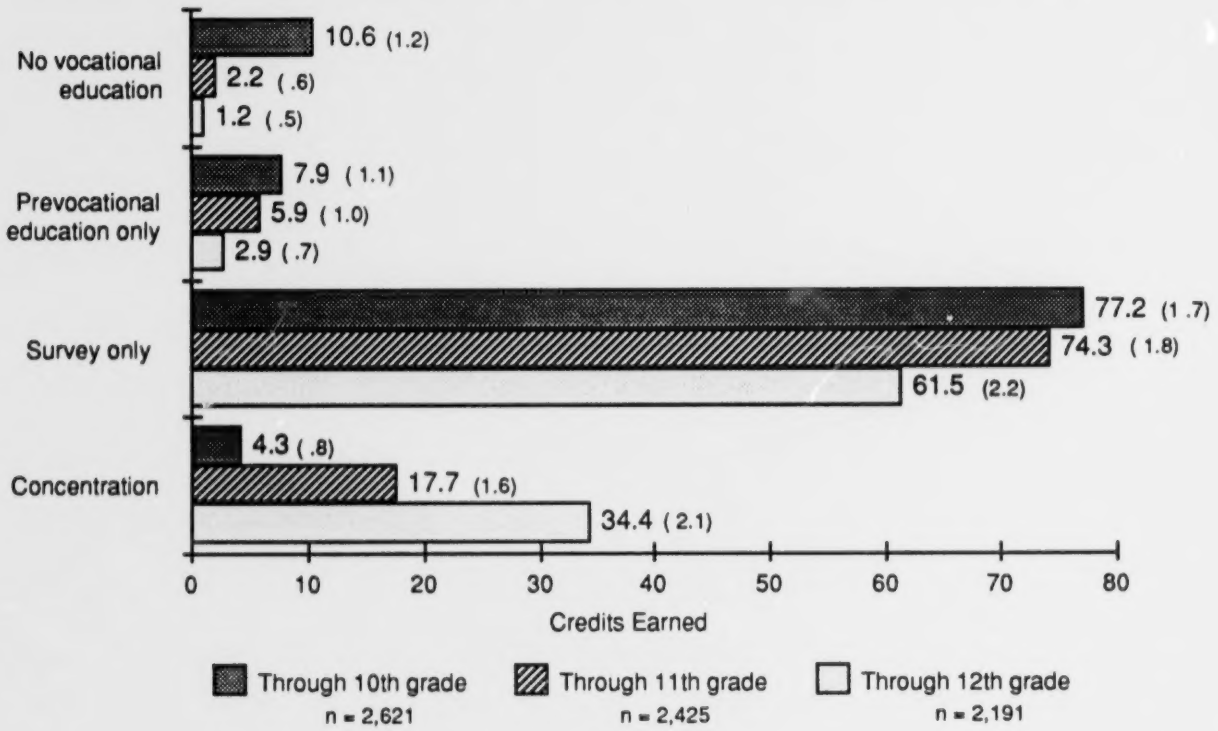
Concentration in Vocational Education

Previous research indicates that participation in vocational education can have a beneficial influence on a host of postschool outcomes, including employment and independent living (Gill and Edgar, 1990; Wagner, 1991). Both the NLTS and other researchers often have considered vocational education in a dichotomous fashion (i.e., enrolled or not enrolled). This chapter and the work of others, however, clearly indicate that there is considerably more variability in vocational course-taking than a dichotomous variable can represent. Some students take more, others take less; some courses are more related to one another than others. A focus on the nature of course-taking thus may present a fuller picture of students' vocational course-taking as well as yield a better predictor of postschool relationships (Hasazi and Cobb, 1988). This approach is further supported by Lotto (1988), who asserts that the benefits of vocational education are maximized when there is a match between the skills taught in school and those required in positions in the labor market. That is, "concentrators" in particular vocational education areas (e.g., mechanics) may have better employment prospects than students who take a similar number of unrelated classes.

We have addressed this issue by creating a scale embodying four categories of vocational education: (1) no vocational education; (2) prevocational education classes only; (3) survey or introductory vocational education classes, with fewer than four classes in any specific area of vocational education (e.g., trade and industry); (4) concentration of vocational education classes, with four or more classes in a specific area of vocational education. Under this definition, for example, a 12th-grade student who had taken taken four trade and industry courses would be considered a "concentrator," while a peer who took two trade and industry

courses and two business and office occupations courses would not. We investigate this concept cumulatively at the 10th-, 11th-, and 12th-grade levels.*

Figure 5-6 shows the level of concentration in vocational education as students with disabilities progressed through secondary school. It is clear that the majority of students participated in survey vocational classes, regardless of grade level. However, the rate at which students concentrated in vocational education rose steadily from 4% through 10th grade to 34% through 12th grade. Thus, by the end of high school, one in three students with disabilities had taken four or more courses in a single vocational education area. These students may have acquired a more coherent job-related skill base than their peers whose vocational experiences were not as focused.



Standard errors are in parentheses.

Figure 5-6 CONCENTRATIONS IN VOCATIONAL EDUCATION, BY GRADE LEVEL

* There are several important differences between the concept we have used, concentration in vocational education, and the concept of sequence used in the National Transcript Study, which relate to the nature of the data collected by the two projects. Because the NLTS has data on students in more than 2,000 schools, it was not possible to obtain course catalogs to determine the ordinality of a sequence of courses. Thus, our term *concentration* is a broader one than that used by the NHSTS, and many more youth fit the criterion for a concentration in vocational education than took a sequence as defined by the NHSTS.

Figure 5-6 also shows that very few students experienced no vocational education or only prevocational education. However, it remains an interesting question why some students did not take vocational education. Table 5-11 shows teacher reports of reasons why specific students did not participate in vocational education. The most common reason is that the students had no interest in vocational education (35%), followed by the response that students were college bound (23%). Skill deficiencies or disability-related reasons each were cited for about 1 in 10 students. Smaller numbers of students were reported as not taking vocational education because of parents' wishes or inappropriateness of vocational offerings. Thus, although a diversity of reasons exist, the most common is student choice.

Table 5-11

REASONS STUDENTS DID NOT TAKE VOCATIONAL EDUCATION

Teacher-Reported Reason for Student's Not Taking Vocational Education	Percentage	Standard Error
Student did not want to take vocational education	35.1	9.0
Student was college bound	22.9	8.0
Student did not have skills	11.2	6.0
Disability prevented taking courses	9.8	5.6
No appropriate vocational classes offered	9.6	5.6
Student needed academic credits; no room in schedule for vocational courses	5.1	4.2
Parent did not want student to take vocational education	3.2	3.4
Student was not aware of vocational offerings	3.0	3.2
n	120	

* Percentages do not sum to 100 because more than one reason could have been reported.

Table 5-12 depicts the degree of concentration in vocational education through 10th, 11th and 12th grades by disability category. Through 12th grade, students with learning disabilities were the most likely to have concentrated in a vocational content area (40%), a significantly higher rate of concentration than peers with multiple handicaps (16%) or visual impairments, for example (19%, $p<.001$). Students with learning disabilities also were more likely to have concentrated in vocational education earlier; for example, by 11th grade, 22% of students with learning disabilities were concentrators, compared with 13% or fewer of students in any other category (at least $p<.05$).

Table 5-12

CONCENTRATION IN VOCATIONAL EDUCATION, BY DISABILITY CATEGORY

Enrollment and Grade Level	Learning Disabled	Emotionally Disturbed	Speech Impaired	Mentally Retarded	Visually Impaired	Hard of Hearing	Deaf	Orthopedically Impaired	Other Health Impaired	Multiply Handicapped
Percentage of students taking no vocational education through:										
10th grade	9.4	16.4	11.6	10.3	21.2	16.4	14.2	22.0	8.6	11.7
	(1.7)	(3.1)	(2.6)	(2.1)	(3.4)	(2.6)	(3.5)	(3.2)	(2.7)	(4.8)
11th grade	1.2	4.7	5.0	2.5	10.8	7.4	2.5	8.7	3.6	3.0
	(.7)	(1.9)	(1.8)	(1.1)	(2.7)	(1.8)	(1.5)	(2.3)	(1.9)	(2.6)
12th grade	.8	.6	1.7	2.3	4.2	2.5	2.2	2.9	4.2	7.9
	(.6)	(.8)	(1.1)	(1.2)	(1.8)	(1.1)	(1.5)	(1.4)	(2.2)	(4.3)
Percentage of students taking prevocational courses only through:										
10th grade	5.2	9.0	8.1	15.1	10.3	9.4	5.2	11.8	10.5	31.5
	(1.3)	(2.4)	(2.2)	(2.5)	(2.5)	(2.0)	(2.2)	(2.5)	(3.0)	(6.9)
11th grade	4.6	4.2	4.5	10.1	6.8	3.9	4.3	8.7	9.9	27.2
	(1.3)	(1.8)	(1.7)	(2.2)	(2.2)	(1.4)	(2.0)	(2.3)	(3.1)	(6.9)
12th grade	1.9	1.9	3.9	5.8	4.7	2.9	.7	5.6	5.5	15.8
	(.9)	(1.4)	(1.7)	(1.9)	(1.9)	(1.2)	(.8)	(1.9)	(2.5)	(5.9)
Percentage of students taking survey courses (no concentration) through:										
10th grade	79.8	71.5	76.2	73.2	65.9	71.6	78.2	64.3	78.3	56.8
	(2.3)	(3.8)	(3.5)	(3.1)	(3.9)	(3.1)	(4.1)	(3.7)	(4.0)	(7.4)
11th grade	72.2	78.9	77.3	78.3	72.9	77.5	86.6	74.0	76.9	63.1
	(2.7)	(3.7)	(3.5)	(3.0)	(3.8)	(2.9)	(3.4)	(3.6)	(4.3)	(7.4)
12th grade	57.0	71.2	64.6	71.0	72.0	68.2	73.9	70.8	66.5	59.8
	(3.2)	(4.5)	(4.2)	(3.6)	(4.0)	(3.4)	(4.5)	(3.8)	(5.2)	(7.9)
Percentage of students taking concentration through:										
10th grade	5.5	3.0	4.0	1.3	2.6	2.6	2.4	1.9	2.6	.0
	(1.3)	(1.4)	(1.6)	(.8)	(1.3)	(1.1)	(1.5)	(1.1)	(1.6)	(.0)
11th grade	22.0	12.1	13.3	9.1	9.5	11.1	6.6	8.6	9.6	6.6
	(2.5)	(3.0)	(2.9)	(2.1)	(2.5)	(2.2)	(2.5)	(2.3)	(3.0)	(3.8)
12th grade	40.3	26.4	29.8	20.9	19.1	26.5	23.2	20.7	23.9	16.5
	(3.1)	(4.4)	(4.0)	(3.2)	(3.5)	(3.2)	(4.3)	(3.4)	(4.7)	(6.0)
10th-grade n	479	237	247	347	246	355	172	277	176	81
11th-grade n	443	198	231	316	228	342	169	258	160	76
12th-grade n	399	167	215	263	215	322	159	240	137	70

Standard errors are in parentheses.

Several variations in vocational concentration by demographic factors are significant and relatively stable over time (Table 5-13). For example, female students were less likely than males to take vocational education and to take a concentration of vocational education, differences that are significant at all grades. Similarly, African American students were

Table 5-13

CONCENTRATION IN VOCATIONAL EDUCATION, BY DEMOGRAPHIC CHARACTERISTICS

Enrollment and Grade Level	Gender		Ethnic Background			Household Income		
	Male	Female	White	African American	Hispanic	<$12,000	$12,000-$25,000	>$25,000
Percentage of students taking no vocational education through:								
10th grade	8.5 (1.3)	15.2 (2.5)	9.3 (1.5)	16.4 (3.6)	10.1 (4.8)	10.7 (2.9)	8.7 (2.4)	11.6 (2.1)
11th gade	1.1 (.5)	4.3 (1.5)	1.8 (.7)	3.1 (1.8)	1.9 (2.3)	3.4 (1.7)	1.0 (.9)	2.1 (1.0)
12th grade	.6 (.4)	2.5 (1.2)	1.3 (.6)	.2 (.5)	2.3 (2.7)	1.4 (1.2)	.5 (.7)	1.9 (1.0)
Percentage of students taking prevocational courses only through:								
10th grade	5.2 (1.1)	7.4 (1.9)	4.5 (1.1)	7.2 (2.6)	10.6 (5.2)	4.5 (2.0)	5.6 (2.0)	5.8 (1.6)
11th grade	7.3 (1.3)	9.2 (2.0)	5.4 (1.1)	12.5 (3.2)	14.2 (5.5)	8.3 (2.6)	7.7 (2.3)	7.2 (1.7)
12th grade	2.8 (.9)	2.9 (1.3)	1.9 (.8)	4.4 (2.3)	6.7 (4.6)	1.5 (1.3)	4.0 (1.8)	2.0 (1.0)
Percentage of students taking survey courses (no concentration) through:								
10th grade	78.9 (2.0)	73.4 (3.1)	79.9 (2.0)	69.9 (4.4)	65.4 (7.5)	77.9 (3.9)	79.9 (3.4)	75.8 (2.8)
11th grade	71.9 (2.3)	79.4 (3.0)	71.6 (2.4)	84.6 (3.7)	70.3 (7.7)	77.8 (4.0)	77.9 (3.6)	73.3 (3.0)
12th grade	56.8 (2.7)	71.4 (3.5)	59.2 (2.7)	79.0 (4.5)	51.4 (9.2)	66.7 (5.0)	58.7 (4.6)	62.2 (3.5)
Percentage of students taking concentration through:								
10th grade	5.3 (1.1)	2.2 (1.0)	5.4 (1.1)	1.3 (1.1)	10.3 (4.8)	3.1 (1.6)	3.6 (1.6)	5.4 (1.5)
11th grade	21.8 (2.1)	8.9 (2.1)	22.1 (2.2)	5.0 (2.2)	17.1 (6.4)	14.4 (3.4)	15.4 (3.2)	18.7 (2.6)
12th grade	39.7 (2.7)	23.2 (3.3)	37.6 (2.7)	16.5 (4.1)	39.6 (9.0)	30.4 (4.9)	36.8 (4.5)	34.0 (3.4)
10th-grade n	1,598	1,022	1,537	437	269	482	574	1,029
11th-grade n	1,473	951	1,448	393	244	443	535	980
12th-grade n	1,319	872	1,337	347	215	390	487	903

Standard errors are in parentheses.

significantly more likely than white peers to receive vocational education through 10th grade ($p<.05$), and were significantly less likely than white peers to take concentrations of vocational education through each of the 3 years ($p<.001$). There does not appear to be a strong association between household income and concentration in vocational education.

Given the diversity of course content in the various areas of vocational education, students who concentrate in different areas are building different skill bases and would logically be candidates for different sectors of the labor market. Table 5-14 shows the cumulative distribution of vocational content area and disability for students who took concentrations during their 4 years of secondary school.* As one would expect, given the distribution of cumulative credits earned in the seven content areas, the majority of concentrators in most disability categories concentrated in trade and industry classes: 78% of students with emotional disturbances, 66% of students with learning disabilities, 59% of students with speech impairments. Two exceptions to this finding are students with visual and orthopedic impairments, who concentrated in office occupations in greater numbers: 66% and 47%, respectively. Office occupations was the second most common area among concentrators in most disability categories, ranging from 66% to 17%. These findings certainly result from an array of factors, including course availability and personal choice.

Table 5-14

AREAS OF VOCATIONAL CONCENTRATION, BY DISABILITY CATEGORY

Content Area	Learning Disabled	Emotionally Disturbed	Speech Impaired	Mentally Retarded	Visually Impaired	Hard of Hearing	Deaf	Orthopedically Impaired	Health Impaired	Multiply Handicapped
Percentage of students concentrating in:										
Agriculture	11.6 (3.2)	2.5 (2.9)	5.9 (3.8)	19.1 (6.7)	.0 (.0)	2.0 (1.9)	.0 (.0)	5.3 (4.1)	2.8 (3.7)	–
Marketing	1.9 (1.4)	3.3 (3.3)	1.2 (1.8)	.0 (.0)	.0 (.0)	.0 (.0)	.0 (.0)	2.5 (2.9)	.0 (.0)	–
Health occupations	.0 (.0)	.0 (.0)	.9 (1.5)	2.1 (2.5)	.0 (.0)	.0 (.0)	.0 (.0)	2.1 (2.6)	2.1 (3.2)	–
Home economics	3.3 (1.8)	5.9 (4.4)	6.8 (4.0)	12.3 (5.6)	4.3 (4.0)	4.7 (2.9)	4.7 (4.5)	10.9 (5.7)	2.9 (3.7)	–
Office occupations	22.1 (4.2)	19.1 (7.4)	25.5 (7.0)	16.9 (6.4)	65.5 (9.5)	41.4 (6.8)	34.0 (10.1)	47.2 (9.2)	40.4 (10.9)	–
Technical education	2.5 (1.6)	2.1 (2.7)	3.5 (3.0)	1.3 (1.9)	13.6 (6.8)	1.3 (1.6)	4.1 (4.2)	7.5 (4.8)	2.4 (3.4)	–
Trade and industry	65.7 (4.8)	78.5 (7.7)	59.0 (7.9)	55.4 (8.5)	24.8 (8.6)	51.8 (6.9)	57.3 (10.6)	32.0 (8.6)	49.3 (11.1)	–
n	163	48	65	57	41	88	36	50	34	12

Standard errors are in parentheses.

These general findings that concentrators took primarily trade and industry and, to a lesser degree, office occupations is true across ethnic and economic groups (Table 5-15). An

* The percentages do not sum to 100% within each disability category because a small number of youth concentrated in more than one area.

exception is the comparatively large number of African American students who concentrated in technical education and marketing. However, Table 5-15 illustrates an interesting finding with regard to gender. While this is consistent with the overall course-taking patterns, it is nonetheless dramatic that female students with disabilities concentrated in home economics in far greater numbers than their male peers. In contrast, males concentrated in greater numbers in the areas of agriculture and trade and industry ($p<.001$). Whether these differences reflect student needs, curricular tracking, or individual choice, it certainly suggests that male and female students with disabilities emerged from secondary school with different vocational education experiences and probably with different skill bases.

Table 5-15

AREAS OF VOCATIONAL CONCENTRATION, BY STUDENT DEMOGRAPHIC CHARACTERISTICS

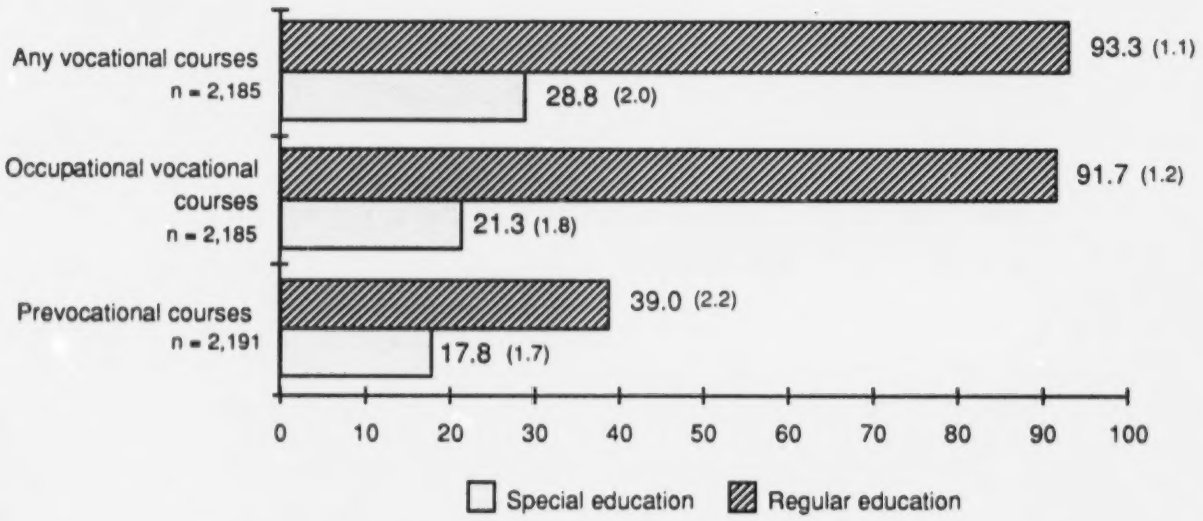
	Gender		Ethnic Background			Household Income		
	Male	Female	White	African American	Hispanic	<$12,000	$12,000-$25,000	>$25,000
Percentage of students concentrating in:								
Agriculture	14.5 (3.1)	.3 (.9)	13.2 (3.2)	3.5 (5.0)	9.2 (9.3)	17.6 (7.6)	10.6 (4.8)	10.5 (3.9)
Marketing	.1 (.3)	7.6 (4.6)	1.2 (1.0)	6.3 (6.6)	.0 (.0)	.0 (.0)	2.7 (2.6)	2.2 (1.9)
Health occupations	.0 (.1)	1.3 (1.9)	.0 (.0)	.0 (.0)	3.8 (6.2)	.2 (1.0)	.2 (.7)	.0 (.0)
Home economics	.2 (.4)	20.3 (7.0)	3.8 (1.8)	.4 (1.7)	5.0 (7.0)	5.3 (4.5)	3.6 (2.9)	5.3 (2.8)
Office occupations	11.1 (2.8)	62.2 (8.4)	23.6 (4.0)	21.6 (11.2)	10.8 (10.0)	18.8 (7.8)	24.0 (6.7)	23.5 (5.4)
Technical education	1.8 (1.2)	5.1 (3.8)	1.1 (1.0)	9.5 (8.0)	6.3 (7.8)	5.2 (4.4)	3.1 (2.7)	.2 (.5)
Trade and industry	80.7 (3.5)	5.8 (4.0)	66.6 (4.4)	58.9 (13.4)	65.2 (15.3)	60.0 (9.8)	65.5 (7.5)	65.4 (6.1)
n	433	161	394	59	57	109	148	227

Standard errors are in parentheses.

Placement for Vocational Education Courses

The original Education for All Handicapped Children Act, the regular education initiative (REI), and the full-inclusion movement all emphasize the importance and benefits of integrated instructional environments for students with disabilities. This debate is heated both in the realms of humanistic philosophy as well as methods of service delivery (Lieberman, 1992). Most, though not all, of this controversy has been focused on primary schools and on

acquisition of academic skills and content (Schumaker and Deschler, 1988). The issues in the debate apply equally to vocational education, and the importance of successful integration strategies in vocational education settings is receiving greater recognition (see Weisenstein, Stowitchek, and Affleck, 1991). In this section, we address the issue of placement in vocational education through an analysis of the instructional setting (i.e., regular or special education) from class placement indicated on student transcripts. Our analyses suggest that the objective of inclusion of students with disabilities in regular education classes is being met in the context of vocational education for large numbers of students. Figure 5-7 shows that, regardless of the type of instruction, vocational education classes were most likely to occur in regular education settings. Regular education was more common than special education as a setting for vocational placement by nearly a factor of four overall and in occupational vocational education, and by a factor of two for prevocational education. Further, the fact that the percentage of students taking special and regular vocational education greatly surpassed 100% suggests that many students experienced both kinds of placements for vocational education during their secondary school careers. These results are similar to the NHSTS, which reported that students with disabilities earned 82% of their vocational education credits in general education (Hayward and Wirt, 1989). However, there is considerable regional variation, and some studies using interview (as opposed to transcript) data with teachers, parents, and students arrive at somewhat different conclusions. For instance, Benz (in press) reported that only 40% of 12th-grade youth with disabilities in Oregon and Nevada received vocational instruction in regular education settings.



Standard errors are in parentheses.

Figure 5-7 PLACEMENT FOR VOCATIONAL EDUCATION COURSES

Table 5-16 depicts the cumulative enrollment and credits earned in prevocational and occupational vocational courses by placement and disability category. The majority of students experienced vocational instruction in general education settings, regardless of disability. Cumulatively, more than 80% of students in nine disability categories had vocational experiences in general education. Far fewer students in most disability categories had special education vocational experiences. In general, students in most disability categories also earned at least three times as many occupational vocational education credits in regular education settings as in special education settings (e.g., students with learning disabilities, 4.2 in regular education, .4 in special education). Also, students in nearly all disability categories were twice as likely to take prevocational courses in regular education as in special education

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Table 5-16

CUMULATIVE ENROLLMENT AND CREDITS EARNED IN REGULAR AND SPECIAL VOCATIONAL EDUCATION, BY DISABILITY CATEGORY

Placement	Learning Disabled	Emotionally Disturbed	Speech Impaired	Mentally Retarded	Visually Impaired	Hard of Hearing	Deaf	Orthopedically Impaired	Other Health Impaired	Multiply Handicapped
Percentage of students taking occupational vocational education										
Regular education	94.6	92.5	94.0	81.1	86.6	92.1	89.0	85.4	88.9	53.4
	(1.4)	(2.6)	(2.1)	(3.1)	(3.0)	(2.0)	(3.2)	(3.0)	(3.5)	(8.0)
Special education	15.7	17.1	9.6	44.1	17.7	22.7	40.1	29.8	23.0	61.9
	(2.3)	(3.8)	(2.6)	(4.0)	(3.4)	(3.0)	(5.0)	(3.8)	(4.7)	(7.8)
Percentage of students taking prevocational education										
Regular education	39.9	36.5	39.2	34.4	39.8	39.2	39.1	42.8	49.3	33.5
	(3.1)	(4.8)	(4.3)	(3.8)	(4.3)	(3.5)	(5.0)	(4.2)	(5.5)	(7.6)
Special education	12.7	11.6	8.8	40.4	9.6	16.3	40.3	21.0	18.5	51.7
	(2.1)	(3.2)	(2.5)	(3.9)	(2.6)	(2.7)	(5.0)	(3.4)	(4.3)	(8.0)
n	399	167	215	263	215	322	159	240	137	70
Average occupational vocational education credits earned										
Regular education	4.2	3.4	3.6	3.3	2.5	3.2	2.8	2.4	2.8	1.7
	(.2)	(.3)	(.2)	(.2)	(.2)	(.2)	(.2)	(.2)	(.2)	(.4)
Special education	.4	.5	.2	1.3	.2	.5	.9	.7	.6	1.9
	(.1)	(.2)	(.1)	(.2)	(.1)	(.1)	(.2)	(.1)	(.2)	(.5)
Average prevocational education credits earned										
Regular education	.4	.4	.4	.5	.4	.4	.4	.4	.5	.5
	(.0)	(.1)	(.1)	(.1)	(.1)	(.1)	(.1)	(.1)	(.1)	(.2)
Special education	.1	.1	.2	.7	.1	.2	.4	.3	.3	1.1
	(.0)	(.0)	(.1)	(.1)	(.1)	(.0)	(.1)	(.1)	(.1)	(.3)
n	399	167	215	263	215	322	159	240	137	70

Standard errors are in parentheses.

($p<.01$). Two exceptions to this observation are that students with mental retardation and students with multiple handicaps took prevocational courses in special education at rates of 40% and 52%, and rates of 34% in regular education. Deaf youth took prevocational classes in regular and special education settings in similar numbers (40%). Students with multiple handicaps and students with mental retardation also earned significantly more special education credits (3.0 and 2.0 total credits) than peers in other disability categories (.3 credits to 1.0 credits) with the exception of deaf students (1.3 credits; all comparisons at least $p<.05$).

Table 5-17 shows cumulative enrollment and earned credits in light of demographic characteristics. It appears that the differences in placement and credits related to

Table 5-17

CUMULATIVE ENROLLMENT AND CREDITS EARNED, BY PLACEMENT AND DEMOGRAPHIC CHARACTERISTICS

	Gender		Ethnic Background			Household Income		
Placement	Male	Female	White	African American	Hispanic	<$12,000	$12,000-$25,000	>$25,000
Percentage of students taking occupational vocational education								
Regular education	92.9 (1.4)	88.7 (2.5)	93.2 (1.4)	87.7 (3.6)	86.4 (6.3)	88.5 (3.4)	90.2 (2.8)	94.3 (1.6)
Special education	19.4 (2.2)	24.9 (3.4)	18.3 (2.2)	21.5 (4.5)	32.3 (8.6)	22.1 (4.4)	25.2 (4.0)	17.9 (2.7)
Percentage of students taking prevocational education								
Regular education	39.9 (2.7)	36.4 (3.8)	40.3 (2.7)	32.3 (5.2)	49.5 (9.2)	40.0 (5.2)	36.0 (4.5)	38.5 (3.5)
Special education	16.6 (2.0)	20.1 (3.1)	15.0 (2.0)	25.3 (4.8)	16.7 (6.8)	19.5 (4.2)	20.6 (3.8)	15.3 (2.6)
n	1,319	872	1,337	347	215	390	487	903
Average occupational vocational education credits earned								
Regular education	4.2 (.2)	3.1 (.2)	4.2 (.2)	3.1 (.3)	3.0 (.4)	3.7 (.3)	3.6 (.3)	4.0 (.2)
Special education	.5 (.1)	.5 (.1)	.5 (.1)	.3 (.1)	.9 (.4)	.5 (.2)	.7 (.2)	.5 (.1)
Average prevocational education credits earned								
Regular education	.4 (.1)	.4 (.1)	.4 (.0)	.4 (.1)	.5 (.1)	.4 (.1)	.4 (.1)	.4 (.1)
Special education	.2 (.0)	.3 (.1)	.2 (.0)	.3 (.1)	.3 (.2)	.3 (.1)	.3 (.1)	.2 (.0)
n	1,319	872	1,337	347	215	390	487	903

Standard errors are in parentheses.

demographic factors result largely from differences in regular education experiences; special education placement is relatively uniform for students who differed in gender, ethnic background, and household income. For example, the higher number of credits earned by males than females in occupational vocational education (see Table 5-10) is all in regular education settings (4.2 vs. 3.1, $p<.01$). Similarly, the greater number of credits earned by white students in occupational vocational education was all in regular education settings ($p<.001$ compared with African American and Hispanic peers). One exception is that African American students took prevocational education in special education settings more than their white peers.

There is a slight tendency for students from families earning higher incomes to take occupational vocational classes in regular education in greater numbers than their less affluent peers. Similarly, students from families earning less than $12,000 annually took these classes in special education than their more affluent peers.

Make-up of Classes in Regular Vocational Education

The NLTS findings and those of the NHSTS (Hayward, 1989) indicate that most vocational instruction received by students with disabilities occurs in the context of regular education. A number of attributes of such classrooms may influence how well students with disabilities succeed there. What were those vocational classes like? How many teachers were in the classrooms? How many students attended? How many were special education students? In this section, we address these questions with information from teacher reports for students with disabilities in 12th grade.

Table 5-18 shows that students with disabilities received vocational instruction in classrooms in which there generally was a single teacher. Further, regular vocational education classrooms had an average of 17 students, of whom 3 were students with disabilities. Vocational classes for 12th-graders, then, tended to be relatively small; this fact may have contributed to an instructional environment in which students with disabilities were more likely to succeed.

Students with mental retardation attended classes with larger numbers of special education peers. Hard of hearing students, students with mental retardation, and students with orthopedic impairments were most likely to be in larger classes, compared with peers with other disabilities.

Table 5-18

SIZE AND MAKEUP OF 12TH-GRADE REGULAR EDUCATION VOCATIONAL CLASSES, BY DISABILITY CATEGORY*

Class Characteristics	All Conditions	Learning Disabled	Emotionally Disturbed	Speech Impaired	Mentally Retarded	Hard of Hearing/ Deaf	Orthopedically/ Health Impaired
Average number teachers and aides	1.1 (<.05)	1.1 (<.05)	1.1 (.1)	1.3 (.1)	1.2 (.1)	1.3 (.1)	1.3 (.1)
Average number of special education students	2.9 (.3)	2.7 (.3)	2.5 (.4)	2.4 (.6)	3.7 (.7)	2.7 (.5)	2.0 (.5)
Average number of regular education students	14.2 (.7)	13.9 (1.0)	14.2 (1.4)	16.4 (1.6)	14.3 (1.4)	16.6 (1.8)	18.9 (1.9)
Average number total students	17.0 (.8)	16.5 (1.0)	16.7 (1.3)	19.1 (1.6)	18 (1.5)	19.6 (1.7)	21.1 (1.8)
n	365	119	39	59	65	43	30

Standard errors are in parentheses.

* There were too few students in other disability categories to disaggregate.

Teachers were asked whether students with disabilities were expected to keep up in their regular vocational education classes and the degree to which they were able to do so. Table 5-19 shows that most students in most disability categories were expected to keep up with other students in the class. This varies from 67% for youth with mental retardation to 100% for those with speech impairments. In general, too, most students with disabilities were able to keep up with the classwork. In fact, students with mental retardation exceeded expectations: 75% were able to keep up. Fewer students with orthopedic impairments or other health impairments kept up (73%) in comparison to expectations (89%). Although the data are not statistically significant because of the small sample size, it is possible that fewer African American students and students from poorer families were expected to keep up in regular vocational education classes.

Accommodations and Supports Offered in Regular Vocational Education

The fact that most vocational instruction offered to students with disabilities occurred in general education settings is a positive finding in light of the inclusion movement. However, mainstreamed settings must be modified for many students with disabilities if they are to succeed there. Modifications can include support offered both to students and to regular education teachers. The NLTS asked teachers to report their need for supports and their students' needs for accommodations, as well as the types of support and/or accommodation they received.

Table 5-19

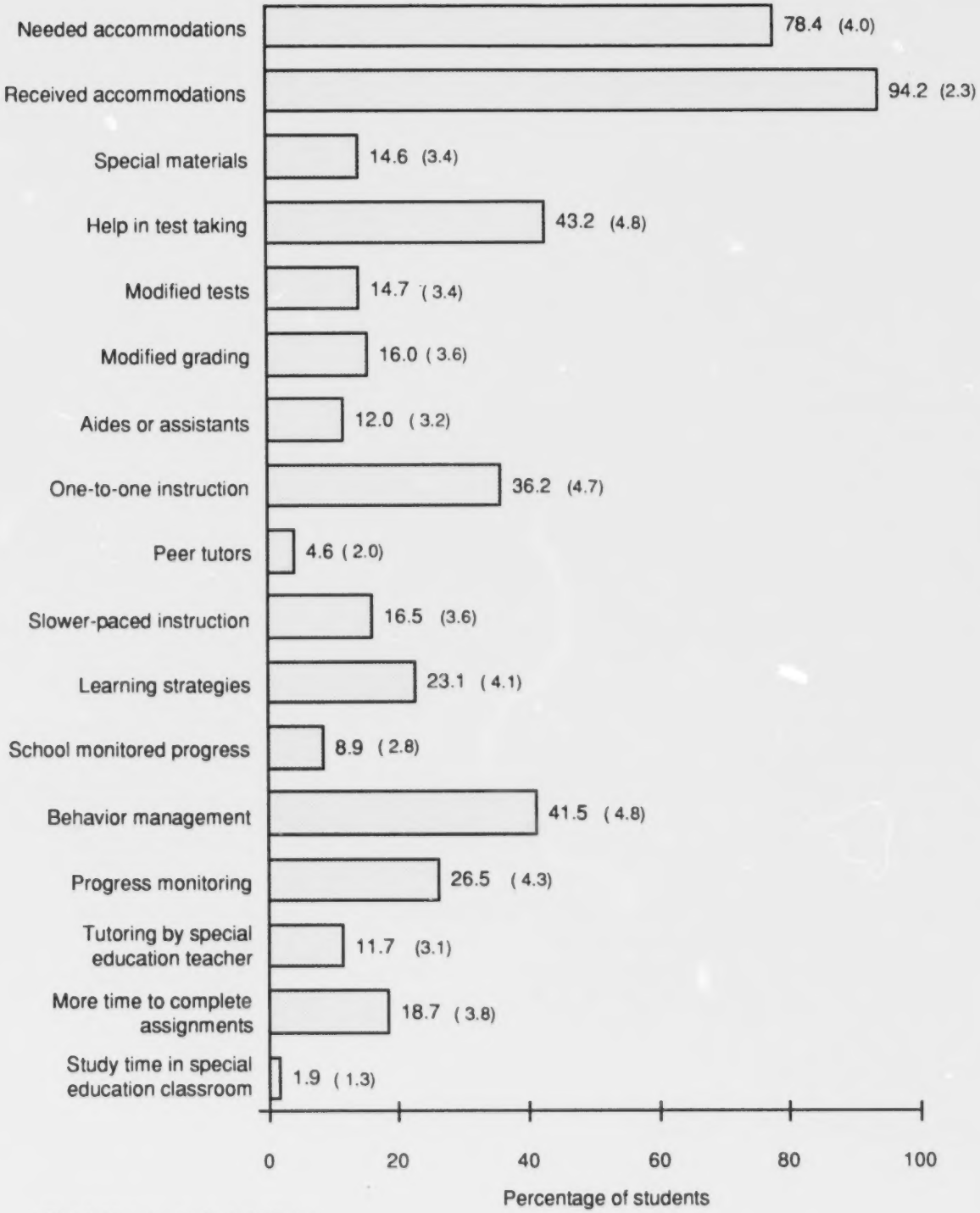
KEEPING UP WITH OTHER STUDENTS IN REGULAR EDUCATION VOCATIONAL CLASSES

	Percentage of Students:		
	Expected to Keep Up	That Generally Did Keep Up	n
Disability categories			
All conditions*	90.9 (2.8)	90.8 (3.0)	383
Learning disabled	96.2 (2.5)	95.5 (3.0)	123
Emotionally disturbed	98.9 (2.6)	93.2 (7.1)	40
Speech impaired	100.0 (.0)	90.9 (7.8)	60
Mentally retarded	67.1 (8.4)	75.3 (7.7)	68
Hearing impaired	96.8 (4.0)	97.0 (3.9)	48
Orthopedically/other health impaired	88.9 (9.8)	73.4 (13.8)	31
Demographic characteristics			
Gender			
Male	91.7 (3.3)	92.7 (3.4)	241
Female	89.2 (5.0)	86.4 (6.0)	142
Ethnic background			
White	94.4 (2.5)	92.1 (3.3)	273
African American	76.5 (11.5)	89.0 (8.8)	54
Household income			
<$12,000	86.3 (7.2)	87.2 (7.5)	76
$12,000 - $25,000	84.0 (7.1)	91.9 (5.8)	101
>$25,000	97.9 (2.2)	90.9 (4.8)	159

Standard errors are in parentheses.

* "All conditions" includes youth in each of the 11 federally defined disability categories. Percentages are reported separately only for categories with at least 25 students.

Teachers were asked which of a list of accommodations were necessary and which were provided. Figure 5-8 shows that nearly all students in regular vocational classes were accommodated in one way or another. In fact, the level of accommodation (94%) exceeded teachers' reports of the extent to which students actually needed accommodations (78%). The most common forms of accommodation were help in test taking (43%), behavior management

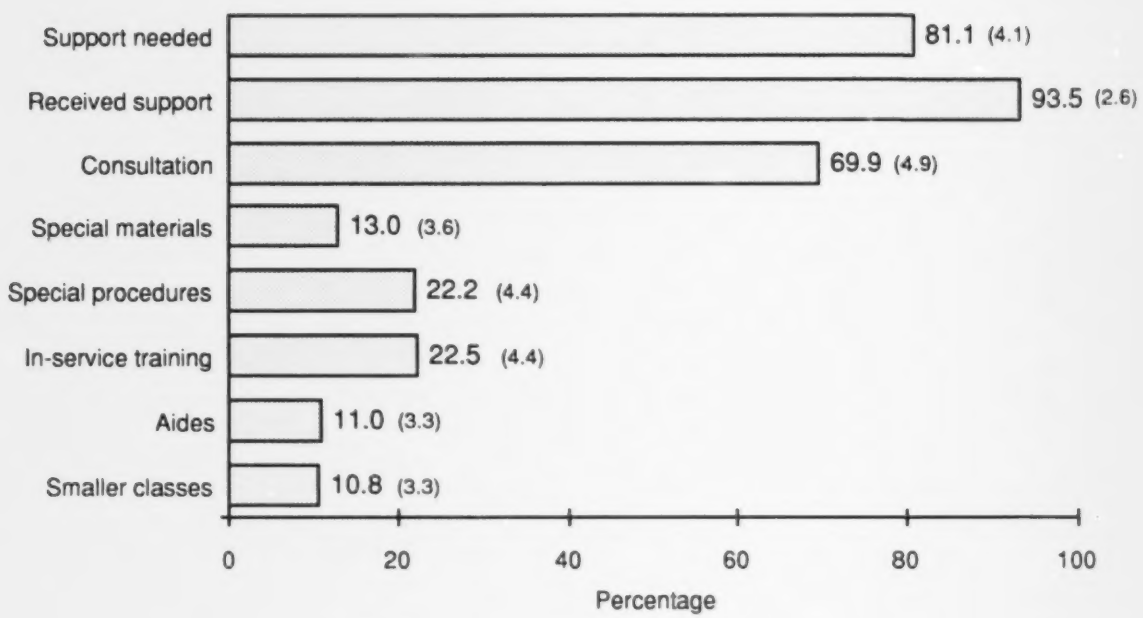


Standard errors are in parentheses.
n = 380 to 449

Figure 5-8 ACCOMMODATIONS FOR STUDENTS WITH DISABILITIES IN REGULAR VOCATIONAL EDUCATION COURSES

(42%), one-to-one instruction (36%), progress monitoring (26%), and adapted learning strategies (23%). Other accommodations, such as modifying tests or grading practices or adding classroom personnel or peer tutors, were less common (5% to 16%). Nonetheless, it appears that a wide range of accommodations were made for students with disabilities in regular vocational education classrooms.

Regular education teachers can be challenged by the presence of students with disabilities in their classrooms. Sometimes they do not feel adequately prepared or competent to address the special learning needs of these students. Thus, it is important that regular education personnel who need support receive it if mainstreaming is to be effective. Figure 5-9 shows that more regular education teachers received support (94%) than felt that they needed it (81%). The most common form of support was consultation provided by special educators or other professional colleagues. Assistance in the form of special procedures or in-service training also was relatively common. Supports requiring greater resources such as aides, materials, or smaller classes were the least common forms of support provided to vocational education teachers.



Standard errors are in parentheses.

n = 324

Figure 5-9 SUPPORTS PROVIDED TO TEACHERS IN REGULAR VOCATIONAL EDUCATION CLASSES

Adjuncts to Vocational Courses: Work Experience and Vocational Services

Work Experience Programs

Work experience or cooperative education programs offer students the opportunity to work for pay in "real" jobs. Since the early days of the transition movement, policymakers have stressed the possible importance of work experience for students with disabilities (Halpern, Benz, and Lindstrom, 1992). Indeed, much research suggested that paid work experience was more likely to result in paid jobs after school (Hasazi, Gordon, and Roe, 1985). Several successful school-to-work models integrate the principles of work experience into their programs (see Rusch, 1986; Siegel, Avoke, Paul, Robert, and Gaylord-Ross, 1991; Siegel et al., 1993). But how many students with disabilities were exposed to work experience programs? To address the degree to which students with disabilities received work experience, alone or in conjunction with other vocational classes, we aggregated data from three sources: (1) student transcripts (on which vocational courses were denoted as having a work experience component or as cooperative education or work experience classes in their own right); (2) the teacher survey, and (3) parent interviews.

Table 5-20 shows the participation of students with disabilities in work experience programs. Although 39% of students with disabilities had some exposure to work experience programs during high school, students with mental retardation (45%) and students with multiple handicaps (46%) were significantly more likely than peers with speech (32%) or visual impairments (27%), emotional disturbances (30%), and hard of hearing students (34%) to receive this kind of training ($p<.05$). Our inclusion of parent and teacher interview data results in estimates somewhat larger than those reported in the NHSTS, in which students earned 17% of the vocational education credits through work experience programs (Hayward and Wirt, 1989). However, our estimates are lower than those of Benz (in press), who reports that 54% of students had work experience programs.

Demographic characteristics, on the other hand, do not generally relate to the likelihood of participation in work experience programs. Gender, for example, does not relate to work experience, nor does household income. However, white students had work experience in greater numbers than African American or Hispanic peers ($p<.05$).

The finding that a number of students had access to work experience programs is encouraging. There are, of course, variations in the design and potential benefits of work experience programs. The most obvious of these is the setting in which the experience takes place. Work experience programs may occur in a comprehensive high school, a vocational technical institute, or the community. Many advocate strongly for community-based work experience because it more closely resembles the nature of the world of work that students will enter on completion of secondary school (Halpern, Benz, and Lindstrom, 1992; Siegel et al., 1993). In addition, the intensity of the work experience program may vary (e.g., 2 hours vs. a half day), which might influence the skill level and the work habits gained by students. Third, the amount of supervision that students receive may be critical

in helping some students to develop both task- and job-related social skills. The NLTS is able to shed light on these issues through the analysis of teacher reports of the proportion of time students spent in school and community-based work experience and the degree of supervision students received.

As was suggested by the transcripts and interview analysis, the majority of students with disabilities were not exposed to these programs, either in their schools (57%) or in their

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Table 5-20

ENROLLMENT IN WORK EXPERIENCE PROGRAMS

	Percentage Participating	Standard Error	n
Disability categories			
All conditions*	38.8	1.5	4,320
Learning disabled	38.7	2.2	819
Emotionally disturbed	29.7	2.9	420
Speech impaired	32.4	3.1	381
Mentally retarded	44.9	2.5	660
Visually impaired	26.9	3.1	357
Hard of hearing	33.5	2.7	528
Deaf	39.7	4.1	247
Orthopedically impaired	40.4	3.1	435
Other health impaired	38.0	3.8	279
Multiply handicapped	49.6	4.9	186
Demographic characteristics			
Gender			
Male	38.0	1.8	2,647
Female	40.9	2.6	1,668
Ethnic background			
White	42.7	1.9	2,616
African American	34.7	3.3	805
Hispanic	33.7	5.9	419
Household income			
<$12,000	38.9	3.2	881
$12,000 - $25,000	41.0	3.0	1,032
>$25,000	43.8	2.5	1,685

* "All conditions" includes youth in each of the 11 federally defined disability categories. Percentages are reported separately only for categories with at least 25 students.

communities (69%), although some variations are evident by disability category (Table 5-21). For example, students with mental retardation (54%), hearing impaired students (59%), and orthopedically or health impaired students (57%) were somewhat more likely than students in other categories to receive some work experience in their schools. The majority of these experiences involved a relatively small amount of instructional time. For example, twice as

Table 5-21

TIME SPENT AND SUPERVISION RECEIVED IN SCHOOL- AND COMMUNITY-BASED WORK EXPERIENCE PROGRAMS, BY DISABILITY CATEGORY

	All Conditions*	Learning Disabled	Emotionally Disturbed	Speech Impaired	Mentally Retarded	Hard of Hearing/ Deaf	Orthopedically/ Other Health Impaired	Other
Percentage of students spending the following proportions of time in school-based work experience program								
None	57.1 (3.9)	60.0 (5.6)	64.0 (9.3)	66.8 (8.)	46.4 (6.3)	41.4 (10.5)	43.4 (9.8)	46.6 (11.3)
< 50%	28.5 (3.6)	26.0 (5.)	19.2 (7.6)	28.7 (7.7)	37.7 (6.1)	22.3 (8.9)	37.8 (9.6)	43.2 (11.2)
50% or more	14.5 (2.8)	14.0 (4.)	16.8 (7.2)	4.5 (3.5)	15.8 (4.6)	36.3 (10.2)	18.7 (7.8)	10.2 (6.9)
n	637	163	68	102	128	62	68	46
Percentage of students spending the following proportions of time in community-based work experience program								
None	68.9 (3.6)	73.0 (5.1)	84.2 (7.1)	72.9 (7.5)	53.7 (6.2)	68.4 (10.1)	50.8 (9.9)	65.8 (11.6)
< 50%	21.1 (3.2)	20.0 (4.5)	9.8 (5.8)	19.0 (6.7)	30.7 (5.7)	15.2 (7.8)	20.8 (8.1)	10.9 (7.6)
50% or more	10 (2.3)	7.7 (3.)	6.0 (4.6)	8.0 (4.6)	15.7 (4.5)	16.4 (8.1)	28.4 (9.)	23.3 (10.3)
n	634	166	68	98	130	60	72	40
Percentage of students supervised								
Never	8.4 (3.5)	11.0 (6.2)	–	7.7 (7.5)	4.5 (3.9)	4.7 (5.9)	–	–
Seldom	11.2 (4.)	11.0 (6.1)	–	6.6 (7.)	14.5 (6.6)	6.0 (6.6)	–	–
Once a month or more, but less than weekly	37.9 (6.2)	42.0 (9.8)	–	47.4 (14.1)	28.1 (8.4)	69.3 (12.8)	–	–
Once a week or more	42.4 (6.3)	37.0 (9.6)	–	38.3 (13.7)	52.8 (9.4)	20.0 (11.1)	–	–
n	236	57	16	32	58	30		

Standard errors are in parentheses.

* "All conditions" includes youth in each of the 11 federal special education disability categories. Percentages are reported separately only for categories with at least 25 students.

many students with disabilities spent less than half of their school days in work experience as spent half or more. Intensity of students' work expeirence varied by disability; 36% of hearing impaired students spent the majority of their school day in work experience programs, whereas only 4% of peers with speech impairments did.

Table 5-21 also shows participation in community-based work experience programs among students with disabilities. This type of work experience was somewhat less common than employment training programs in school settings, but disability remained an important factor. For example, only 16% of students with emotional disturbances engaged in such programs, compared with nearly 50% of peers with mental retardation or orthopedic or other health impairments. Community-based programs, too, seemed somewhat less likely to take more than half of the school day than school-based counterparts. For example, 21% of students with disabilities overall, 31% of students with mental retardation, and 10% of students with emotional disturbances were involved in community-based work experience for less than half a day; about 20% of students in most other categories were. As would be expected because of the lower overall rates of community-based work experience, the number of students (10%) spending between half and their entire day in such programs is less than in school-based programs. This number is variable with respect to disability as well: 6% of students with emotional disturbances, compared with 28% for peers with orthopedic impairments. Thus, community-based work experience programs were somewhat less common than their school-based equivalents and were less intense.

Another possible key to effective work experience programs may be the degree to which students receive supervision and guidance to help them develop work-related task and social skills. Table 5-21 reports the frequency with which students in different disability categories received supervision in their work experience placements. Many students with disabilities were supervised at regular, fairly short intervals; 42% of students overall, 53% of students with mental retardation, and 20% of hearing impaired students received supervision at least weekly. A similar proportion (38%) received supervision at least monthly, but less than weekly. This ranged from 69% for hard of hearing students to 28% for students with mental retardation. Only about one-fifth of students with disabilities were seldom or not at all supervised. In general, students with mental retardation and students with orthopedic impairments received more frequent supervision than students with emotional disturbances or hearing impaired students.

Career Vocational Services

As this chapter and other research demonstrate, despite considerable variation by disability, demographics, and course type, nearly all students with disabilities had access to vocational education. In addition to encouraging access to existing programs, the transition initiative outlines a series of career vocational services that schools could provide to improve the job preparedness and probability of postschool employment for students with disabilities. Career counseling, work exploration, and vocational assessments are intended to help

students focus on their career interests, their skills, and programs that are available to help students achieve their goals. In some instances, this might include some job development activities, such as contacting employers, assisting employers in modifying job tasks, and monitoring student progress on the job. In this section, we address the extent to which the aforementioned activities occur, according to teacher reports.

Table 5-22 presents teacher reports of students with disabilities' receipt of career vocational services. Schools gave formal vocational assessments to a majority of students in all disability categories. This ranged from 64% of students with orthopedic impairments to 81% for students with mental retardation. Similarly large proportions of students received career

Table 5-22

VOCATIONAL SERVICES PROVIDED TO 12TH-GRADE VOCATIONAL EDUCATION STUDENTS, BY DISABILITY CATEGORY*

Percentage of students who received:	Learning Disabled	Emotionally Disturbed	Speech Impaired	Mentally Retarded	Hearing Impaired	Orthopedically/ Other Health Impaired
Vocational instruction	100.0 (.0)	99.3 (1.5)	94.4 (3.8)	99.4 (.9)	100.0 (.0)	94.1 (4.5)
A formal vocational assessment	75.7 (4.9)	69.5 (8.6)	66.3 (8.4)	80.9 (4.8)	73.6 (8.7)	63.7 (9.5)
Career counseling	94.6 (2.5)	85.2 (6.3)	84.1 (6.1)	78.8 (4.9)	81.2 (7.6)	69.1 (8.9)
Job readiness training	79.4 (4.6)	73.6 (8.0)	64.0 (8.1)	86.3 (4.2)	75.0 (8.4)	80.5 (7.6)
Work exploration/experience	67.1 (5.3)	53.1 (9.2)	44.3 (8.6)	73.1 (5.4)	53.2 (9.7)	71.8 (8.7)
Specific job skills training	64.7 (5.3)	54.6 (9.2)	51.6 (8.6)	58.6 (6.0)	66.5 (9.2)	56.0 (9.6)
Referrals to potential employers	37.7 (6.0)	55.7 (9.3)	27.4 (8.6)	57.9 (6.1)	28.4 (9.1)	41.7 (9.7)
Instruction in job search methods	91.6 (3.1)	86.0 (6.3)	84.3 (6.5)	87.1 (4.1)	76.4 (8.3)	68.8 (8.9)
School staff worked with employers	17.5 (4.4)	10.5 (5.9)	16.3 (6.4)	40.4 (6.1)	29.7 (8.9)	50.7 (9.9)
School monitored progress	42.0 (5.8)	45.3 (9.4)	38.8 (8.5)	59.4 (6.1)	37.9 (9.5)	61.5 (9.7)
n	179	76	108	144	74	80

Standard errors are in parentheses.

* There were too few students in some categories to disaggregate

counseling (89%) and instruction in job search methods (88%). In these instances, students with learning disabilities, emotional disturbances, or speech impairments were slightly more likely than peers with orthopedic impairments to receive these services. In addition, large majorities of students in all categories (65% or more) were exposed to some kind of job readiness training and to work exploration programs (66%). Job skills training was offered to remarkably comparable numbers of students in all disability categories—all over 50%. Schools offered work exploration programs diversely according to disability category, however. For example, 72% of students with orthopedic impairments took part in this program, while only 44% of peers with speech impairments did ($p<.05$). Substantial numbers of students were referred to potential employers (43%), had staff work with employers on their behalf (23%) or had their progress monitored by school personnel (46%). For services regarding working with employers and monitoring student progress, students with mental retardation and students with orthopedic impairments were the most likely recipients. For example, students with mental retardation and orthopedically impaired students were significantly more likely than peers with learning disabilities, emotional disturbances, or speech impairments to have had school staff work with employers to modify job tasks or monitor progress ($p<.05$).

Summary and Conclusion

This chapter supports the view that the goal of access to vocational education programs for students with disabilities has been substantially achieved. However, the experiences of students with disabilities in vocational education in secondary school are complicated by issues of disability, demographics, and placement. This no doubt reflects a complex array of forces, including graduation requirements, minimum competency requirements, and vocational education's historic role as an elective. It is thus difficult to interpret the degree to which vocational needs are reflected in students' coursework. We attempt here to summarize the results of this chapter via the following questions:

- **To what extent did students with disabilities have access to vocational education?** We have found that virtually all students with disabilities were exposed to vocational instruction during their high school careers. For many students with disabilities, experience with vocational education began in their freshman year: 68% of all students with disabilities took at least one vocational course in 9th grade. This number increased with each successive year of secondary school. By 12th grade, 89% of students were taking a vocational education class.

- **Did students with disabilities participate in all types of vocational education uniformly?** Vocational education can be thought of either as occupational—where course content is more or less linked to specific job-related skills—or as prevocational, where course content focuses more generally on job readiness skills and career awareness. Many more students participated in occupational vocational education than in prevocational education. Furthermore, students with disabilities earned 4 times as many credits in occupational vocational education (4.5) as they did in prevocational education (.7).

Within the seven content areas of occupational vocational education, more students with disabilities took classes and earned more credits in trade and industry (59%, 1.9 credit), office occupations (58%, .8 credit), and technical education (63%, 1 credit) than they did in agriculture (18%, .4 credit), marketing (10%, .2 credit), health occupations (2%, .1 credit), or home economics (28%, .5 credit).

It is important to note, however, that this distribution of courses may reflect the relative number of opportunities to take some kinds of vocational education (i.e., there are many more course offerings in trade and industry than there are in health occupations), in addition to their suitability and/or attractiveness for certain students.

- **Did some students with disabilities take more or different kinds of vocational education?** Students in some disability categories were more likely to take some kinds of vocational education than others. For example, students with learning disabilities took courses in greater numbers and earned more credits in general occupational vocational education and trade and industry classes. Students with mental retardation were among the most likely to take prevocational education, agriculture, health occupations, and home economics, but were among the least likely to take courses in office occupations and technical education. On the other hand, students with visual impairments, hard of hearing students, deaf students, and students with orthopedic or other health impairments were most likely to enroll in business and office occupations and technical education.

  The association of demographic characteristics and vocational course-taking is complex, and depends largely on the particular area of vocational education. For example, although similar numbers of males and females were exposed to occupationally relevant vocational education (98%), male students earned more credits than females in that area (4.8 vs. 3.7). Males earned more credits than female peers in trade and industry (2.6 vs. .4) and in agriculture (.6 vs. .1). However, females earned more credits than male peers in home economics (.9 vs. .2), office occupations (1.3 vs. .6), and technical education (1.4 vs. .8). Despite this diversity, male students with disabilities generally were exposed to a greater amount of occupational vocational education than their female peers.

  Although similar in cumulative rates of participation, white students earned more credits than their African American and Hispanic peers in occupational vocational education (4.8 vs. 3.5 and 3.9), agriculture (.5 vs. .2 and .2), business and office occupations (.9 vs. .6 and .5), technical education (1.1 vs. .8 and .8), and trade and industry (2.1 vs. 1.2 and 1.7). White students take more occupational vocational instruction than their African American or Hispanic peers.

  The annual household income of students with disabilities did not exhibit a consistent or powerful pattern with vocational course-taking in general.

  The observations above apply largely to regular education. However, precisely that category of students least likely to take some vocational courses in regular education was the most likely to take them in special education. This was the case for students with multiple handicaps in the cases of business and office occupations, technical education, and trade and industry classes.

- **Did students with disabilities concentrate in particular vocational education content areas?** Cumulatively, 34% of students with disabilities took vocational concentrations during their high school careers (i.e., four or more classes in a content area). This ranged from 40% for students with learning disabilities to 17% for students with multiple handicaps. The largest category of concentrations occurred in trade and industry (66%), followed by office occupations (22%).

- **Did students with disabilities participate in vocational education in regular education?** The least restrictive environment provision of PL. 95-142 (LRE), the regular education initiative (REI), and the movement for full inclusion all stress the importance maximum integration both in community and instructional settings. As these concerns apply to vocational education, we have found that the majority of students with disabilities received vocational education in regular education settings. Over the 4 years of high school, 92% of students received instruction in occupational vocational education in regular education, compared with 21% who had similar instruction in special education. This observation applies both to the numbers of students participating and to the number of credits they earned in both settings.

There is no doubt that much progress has been made during the past decade in terms of access to vocational programming. However, two areas warrant discussion.

First, we do not know how much vocational education is the "right" amount. Clearly, this varies from student to student. For example, we have learned that most students do not concentrate in a particular vocational content area. If concentrators find more success in the postschool labor market, then there is room for improvement in the rate at which students receive more intense instruction in particular content areas. In addition, vocational education, regardless of the type, remains a secondary part of most students' high school experience. Future NLTS reports will investigate the impact of degree of vocational education on measures of postschool success.

Second, none of these findings unequivocally addresses the issue of why some types of students take some classes and not others. In some instances, an explanation based on disability differences seems plausible. This could explain, for example, the difference in the participation of deaf students and students with mental retardation in technical education classes. In other instances, the pattern of course-taking follows remarkably traditional stereotypes: female students with disabilities outnumbered males in home economics, while males outnumbered females in trade and industry classes. The difference might be moot were it not for the tendency for trade and industry classes to be linked to higher-wage jobs and for the gap in the postschool employment data across gender. In any event, this pattern could reflect historical inertia, real or perceived need, or individual students' preferences, or some combination of factors.

In conclusion, there are a number of positive aspects of vocational course-taking among students with disabilities. First, students with disabilities did have access to vocational education and many gained access early in their high school careers. Second, some students concentrate in particular vocational education program areas. This concentration may result in

stronger chances of postschool employment for those students. Third, students received an array of career-vocational services from school districts, including vocational assessment and occasionally job development. Fourth, some students took work experience programs in their schools or communities. Each of these points is positive and holds promise for improving the postschool employment prospects of students with disabilities. These trends and services seem likely to improve further with the transition planning mandate in IDEA.

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6 SUPPORT SERVICES PROVIDED BY SECONDARY SCHOOLS

by Renée Cameto

As specified in the Education of the Handicapped Act, P.L. 94-142, a free appropriate public education includes not just a special education placement and/or instruction, but also related services—"such developmental, corrective and other supportive services as may be required to assist a handicapped child to benefit from special education." A variety of related or support services can be provided by schools. Eligibility for them is determined through the process of developing an individualized education plan (IEP), and services deemed necessary for a student are prescribed in the IEP. The NLTS has investigated the extent to which students were provided six specific support services:

- Occupational therapy or life skills training
- Help from a tutor, reader, or interpreter
- Personal counseling or therapy
- Speech or language therapy
- Physical therapy or mobility training
- Transition planning.

For each of these support services, we address the following questions:

- To what extent did students in regular secondary schools receive any of these support services? Each of these support services?
- How did receipt of these services vary for students who differed in disability category, gender, ethnic background, and household income?
- To what extent did receipt of these support services relate to students' educational placement, i.e., the amount of time they spent in regular education classes? Did support services appear more commonly to augment regular education placements or to support students who spent greater time in special education classes?

In addition to these questions, our analysis of transition planning includes a more detailed description of the planning process, including a discussion of the goals for individual students in transition, the participants in the process, and the kinds of organizations contacted by the schools in the context of transition planning. After a discussion of issues involved in measuring service receipt and interpreting results, the remainder of this chapter presents findings related to each kind of support service.

Measuring Receipt of Support Services

Measures regarding students' receipt of support services come from several sources:

- *Parent reports*—In 1987 and 1990, parents were interviewed by telephone and asked whether in their child's most recent year in secondary school, they had received the first five support services listed above (transition planning was not included) and who provided the service. This chapter focuses only on services provided by the secondary school for students attending regular secondary schools.
- *Students' school records*—Students' school records were obtained in a variety of forms. In 1987, school records for students' most recent year in secondary school (either the 1985-86 or 1986-87 school year) were abstracted by on-site school staff, who used a form provided by SRI. In addition to information on course-taking and grades, the abstract form also asked the record abstractor to indicate whether the school record indicated that the student had received from the school any of the first five services listed above during that school year (transition planning was not included). In 1990, a similar abstracting process was carried out for students who did not have regular school transcripts, and similar information about support services was solicited. For students who had regular transcripts, only information about life skills courses was available from those transcripts; other support services were not routinely provided as courses and, hence, did not appear on transcripts.
- *Teacher reports*—In 1988, 1989, and 1990, surveys were administered to the teachers of selected students still in school in those years; the survey included items regarding receipt of the support services listed above in the most recent school year. This is the only source of information about transition planning.

Data from these sources were combined to develop the measures reported in the remainder of this chapter. Because of the sources and combinations of data, several caveats in interpreting the results should be kept in mind by readers:

- *Services reported are those provided by secondary schools only.* Students may have received support services from other sources, including parents or peers (as tutors, for example), private providers (e.g., private psychologists providing personal counseling), or other programs. Findings that particular students did not receive a service from the school should not be interpreted as indicating that the student did not receive the service at all, although earlier NLTS analyses of services received in school indicate that schools were by far the most common source of support services for children while they were in secondary school (Wagner, 1991).
- *Services are reported for single years only, not for students' entire school careers.* The parent interviews, school record abstracts, school content forms, and teacher surveys all asked about receipt of support services for a particular school year. It is unknown whether students' experiences with services in a particular year were similar in other years. Because the NLTS has a large, representative sample of students for each grade level, we can describe the experiences of students at each grade level, but not for an entire secondary school career.

- *Definitions or descriptions of support services are broad.* Readers should note that the NLTS collected information about very broad types of services, such as "occupational therapy or life skills training," rather than a more limited designation of occupational therapy alone. The precise services we investigated are described in the pertinent sections in the remainder of this chapter.
- *Parents may not have had full or accurate information about services provided by schools to their children.* Although school records were used as a source of information whenever possible, we also have relied on parents' reports of whether their children in secondary school received particular services and whether the schools were the providers of those services. Other NLTS analyses explored the extent of agreement about services received in the past year from schools between parent reports and school records in almost 4,600 cases in which both sources of information were available (Appendix C, Wagner et al., 1991). Rates of agreement ranged from 46% regarding personal counseling/therapy to 69% for speech therapy. Both parents and school records contributed to these discrepancies. Parents may simply have been unaware of services provided at the school. Similarly, students may have received services unrelated to a disability (e.g., counseling from the school guidance counselor about peer problems) that would be known to parents but not appear on any school records. Hence, any positive report of receipt of service was accepted, whether or not it agreed with other sources of information.

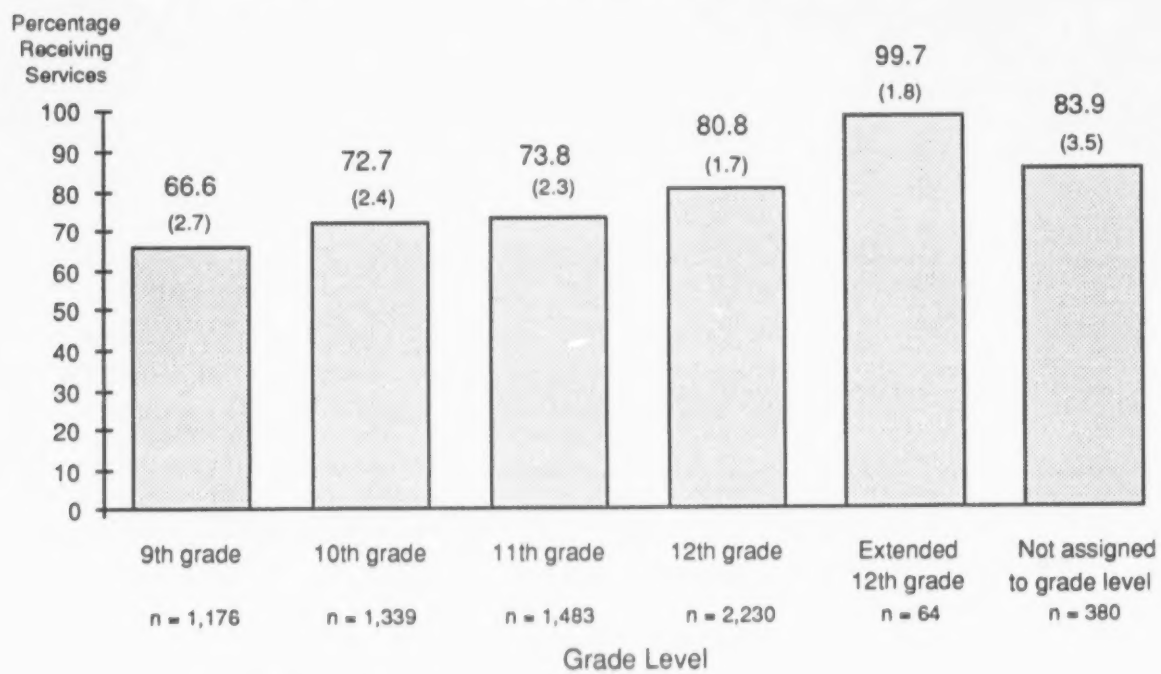
Receipt of Support Services from Secondary Schools

For some students with disabilities, special education classes alone may provide sufficient support for them to succeed academically in secondary school. For others, who exhibit varied and often numerous difficulties, deficits, or delays, a variety of additional support services may be needed from the school to help them benefit from their educational programs. Youth in different disability categories receive different types of support services based on the nature of their disability and the kind of additional help or support they require. Some services meet very specific needs and are appropriate for a select group of youth with a certain disability. For example, physical therapy is a typical service for youth with orthopedic impairments, speech therapy for youth with speech impairments, reader services for youth with visual impairments, and interpreter services for youth with hearing impairments. Youth also may have a secondary disability and require support services not typically associated with their primary disability category.

In contrast, some services meet more general needs—for example, tutoring, personal counseling, or occupational therapy/life skills training—and could be appropriate for youth with a variety of disabilities. Services may be delivered through consultation from an appropriate professional with teachers and parents, or directly to the student. Direct services may be provided on an individual basis or in groups. In particular, life skills training may be provided in a classroom setting, such as a regular education home economics class, or in a self-contained special education classroom with a focus on functional daily living skills.

Figure 6-1 shows that a majority of students with disabilities at all grade levels received from their secondary schools one or more of the support services we investigated. Further, a greater percentage of students with disabilities received some type of support service with each successive grade in high school. Two-thirds of 9th-grade students with disabilities received one or more services, increasing to almost three-fourths in 10th and 11th grades and to four-fifths in 12th grade ($p<.05$). The percentage of students who received support services among those who remained in 12th grade for a second year was even higher; virtually all students in extended 12th grade received some type of service, as did 84% of students who were not assigned to a grade level. This percentage is similar to that for 12th-grade students with disabilities, but significantly higher than for students in 9th to 11th grades ($p<.001$).

This trend of increasingly more students being provided support services as they advance through the grades held for students in nearly all disability categories, as shown in Table 6-1. However, there were significant differences in the extent to which services were received by students with different disability classifications. Students classified as deaf or multiply handicapped were more likely than students in nearly all other disability groups to receive some type of support service ($p<.05$ to $p<.001$). Also for these students, service receipt



Standard errors are in parentheses.

FIGURE 6-1 STUDENTS WHO RECEIVED SUPPORT SERVICES FROM THEIR SCHOOLS, BY GRADE LEVEL

Table 6-1

STUDENTS WHO RECEIVED SUPPORT SERVICES FROM THEIR SCHOOLS, BY DISABILITY CATEGORY

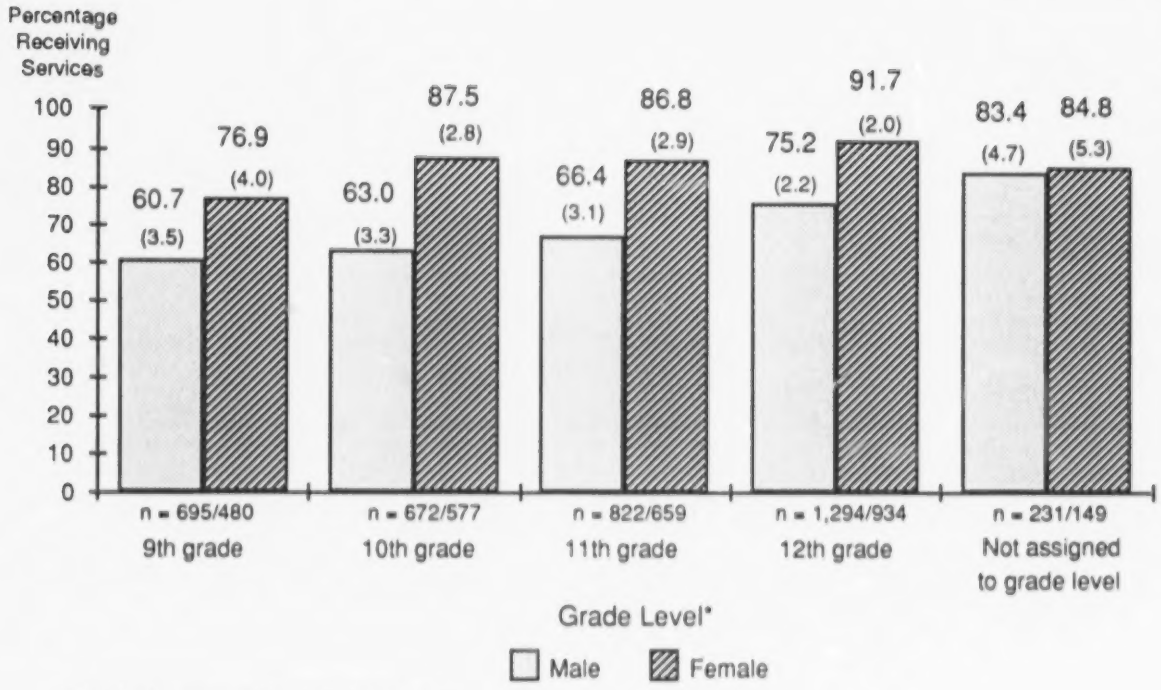
Percentage receiving services in:		Learning Disabled	Emotionally Disturbed	Speech Impaired	Mentally Retarded	Visually Impaired	Hard of Hearing	Deaf	Orthopedically Impaired	Other Health Impaired	Multiply Handicapped
9th grade		64.0	62.9	67.2	74.3	55.0	79.7	93.3	79.4	71.1	91.7
		(4.2)	(5.2)	(5.3)	(4.4)	(6.5)	(4.6)	(4.2)	(4.6)	(6.2)	(6.3)
	n	215	143	128	159	96	128	59	129	87	32
10th grade		67.9	69.1	75.4	83.8	65.8	84.3	94.1	81.4	69.0	96.0
		(3.9)	(5.2)	(5.3)	(3.1)	(5.6)	(3.7)	(3.6)	(4.3)	(6.4)	(3.9)
	n	237	129	108	235	122	165	71	138	88	44
11th grade		69.0	75.0	86.5	83.7	80.7	89.2	99.0	84.1	74.9	92.0
		(3.4)	(5.1)	(3.8)	(3.1)	(4.9)	(2.9)	(1.4)	(3.9)	(5.7)	(4.7)
	n	303	117	132	233	110	188	90	153	98	59
12th grade		78.0	81.3	89.1	85.9	84.3	96.8	96.1	90.1	85.8	93.0
		(2.5)	(3.6)	(2.9)	(2.4)	(3.6)	(1.9)	(2.1)	(2.7)	(4.2)	(4.0)
	n	460	200	192	345	178	295	147	221	117	74

Standard errors are in parentheses.

Students in extended 12th grade and those not assigned to grade levels are not included here because the samples were too small to disaggregate.

reached its highest levels in earlier grades. By 10th grade, 96% of multiply handicapped youth were receiving services, and by 11th grade, 99% of deaf youth were receiving services. In contrast, youth with visual impairments, emotional disturbances, or learning disabilities were the least likely to receive services during their high school careers, ranging from 55% to 64% in 9th grade and increasing to no more than 78% to 84% in 12th grade.

There were notable differences between male and female students in the extent to which they received support services. Figure 6-2 shows that in all grades, females were significantly more likely to receive support services than males. In 9th grade, 61% of males and 77% of females received support services ($p<.01$). The differences were even greater in 10th through 12th grades: between 63% and 75% of males received services, whereas 87% to 92% of females were provided services ($p<.001$). This gender difference may well reflect the different distribution of disabilities among males, who were more likely than females to be classified as having learning disabilities or emotional disturbances (Marder & Cox, 1991), categories of students less likely than others to have received support services.



Standard errors are in parentheses.

* Students in extended 12th grade are not included here because the sample was too small to disaggregate.

FIGURE 6-2 MALE AND FEMALE STUDENTS WHO RECEIVED SUPPORT SERVICES FROM THEIR SCHOOLS

Unlike for students at grade levels, there was essentially no difference between male (83%) and female (85%) students not assigned to grade levels in the percentage of students receiving some type of support service, probably reflecting a more even balance in disability distribution between genders among these students. We see that male students not at grade levels were significantly more likely to receive support services than male students in grades 9 to 11 ($p<.01$), thereby eliminating the difference between genders.

There was no difference based on ethnic background in the receipt of support services between students at grade levels, and those not assigned to grade level. Among students assigned to grade levels, household income also was unrelated to receipt of support services. However, among students not assigned to grade levels, there was a significant difference between students from the lowest-income families (less than $12,000 per year) and those from families with incomes of more than $25,000 per year ($p<.05$). Seventy percent of students from low-income families received some type of support service, whereas more than 91% of students from higher-income families received services. Perhaps parents with higher incomes were more involved in advocating for services for their children.

The receipt of support services also was strongly related to the number of hours students spent in regular education classes. Table 6-2 shows that students who spent less time in

Table 6-2

STUDENTS WHO RECEIVED SUPPORT SERVICES FROM THEIR SCHOOLS, BY HOURS IN REGULAR EDUCATION

Grade Level		Hours Per Week in Regular Education: 0	1-10	11-20	21-30	>30
Percentage receiving services in:						
9th grade		78.8	70.0	64.6	62.8	67.8
		(6.9)	(5.8)	(5.7)	(4.7)	(8.4)
	n	124	206	252	466	127
10th grade		88.5	78.6	75.6	66.7	68.4
		(5.0)	(5.2)	(4.4)	(4.3)	(7.8)
	n	128	212	309	523	154
11th grade		89.3	77.3	71.8	70.9	73.9
		(4.7)	(5.3)	(4.2)	(4.0)	(6.9)
	n	152	239	385	534	163
12th grade		83.1	76.2	73.2	84.9	94.4
		(4.5)	(4.4)	(3.5)	(2.7)	(3.1)
	n	274	325	588	749	228
Not assigned to grade level		86.9	64.7	--	--	--
		(3.9)	(12.2)			
	n	255	55			

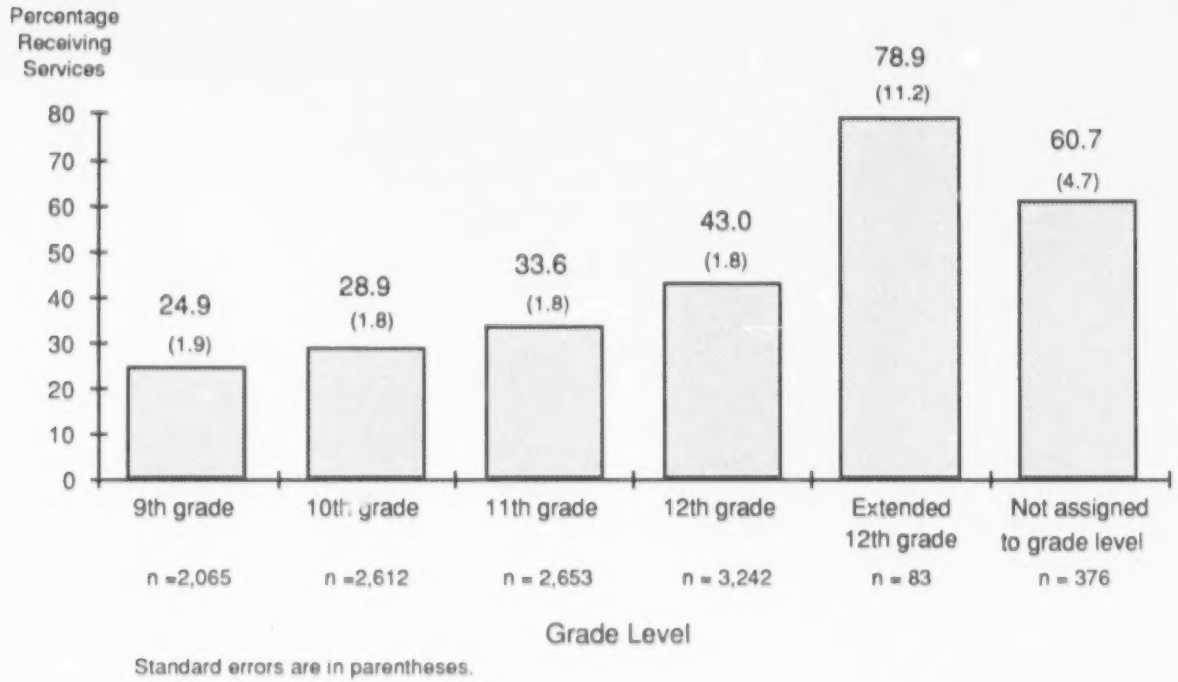
Standard errors are in parentheses.
Percentages are reported separately only for categories with at least 25 students.

regular education received more support services in 9th through 11th grades. In these early grades, support services apparently were more likely to be a component of programs with a special education emphasis than of more mainstreamed programs. For example, in 9th grade, 79% of students who were in special education classes all day received some type of support service, compared with 63% of students with 21 to 30 hours per week in regular education ($p<.05$). In 10th and 11th grades, 89% of students with no regular education classes received support services, compared with 67% of 10th- and 71% of 11th- grade students with 21 to 30 hours in regular education classes ($p<.001$ and $p<.01$). However, in 12th grade, the pattern of the receipt of services changed markedly. Youth with more than 30 hours in regular education classes were provided significantly more services ($p<.01$) than they had in 11th grade. Whereas in 11th grade, 74% of these students received support services, in 12th grade, the percentage increased to 94%, thereby making their level of service receipt higher than students spending less time in regular education ($p<.05$ to $p<.001$ for students with fewer than 21 hours in regular education).

Occupational Therapy or Life Skills Training

This category of service is extremely broad. It includes occupational therapy, which trains students in hygiene, dressing, feeding, and toileting, training that may be necessary for very few secondary students with disabilities. Adaptive or prosthetic devices related to fine motor control may be provided as part of occupational therapy services. However, this category of service also includes life skills training, which may entail the self-care skills mentioned above as well as other skills for daily living, such as home care, meal preparation, money management, or social skills training. This kind of training may be provided in a classroom setting, including regular education classes in home economics or self-contained special education classes with a focus on functional daily living skills. Many more students experience life skills training than the more specific services of an occupational therapist. For this reason, in the remainder of this section we refer to this category of service as life skills training.

Given its broad definition, it is not surprising that life skills training was the support service most frequently received by students with disabilities. Figure 6-3 shows that in 9th grade, 25% of students with disabilities received the service; by 12th grade, 43% were receiving life skills training ($p<.001$). The increase was most dramatic between 11th and 12th grades, increasing from 34% to 43% ($p<.001$). The increase in the provision of life skills training continued for



Standard errors are in parentheses.

FIGURE 6-3 STUDENTS WHO RECEIVED LIFE SKILLS TRAINING FROM THEIR SCHOOLS, BY GRADE LEVEL

students in a second year of 12th grade, when 79% of students received such training, an increase of more than 35 percentage points ($p<.01$) from the first year of 12th grade. Life skills training also was part of the program for a majority of students not assigned to a grade level, 61% of whom received life skills training ($p<.001$) compared with students assigned to a grade level.

The increases between grades 9 and 12 held for all disability groups (Table 6-3; p values between grade 12 and other grades ranged from <.05 to <.001 for all disability categories except multiply handicapped). However, different disability groups experienced marked differences in the extent to which they received life skills training. Students with mental retardation and multiple handicaps consistently received life skills training more frequently than youth in other categories of disability at each grade. By 12th grade, more than half of both groups were receiving life skills training. Students with visual, speech, or other health impairments and those with emotional disturbances were the least likely to receive life skills training; rates of service receipt did not reach 40% for students in these categories.

Table 6-3

STUDENTS WHO RECEIVED LIFE SKILLS TRAINING FROM THEIR SCHOOLS, BY DISABILITY CATEGORY

	Learning Disabled	Emotionally Disturbed	Speech Impaired	Mentally Retarded	Visually Impaired	Hard of Hearing	Deaf	Orthopedically Impaired	Other Health Impaired	Multiply Handicapped
Percentage receiving services in:										
9th grade	23.2	22.2	19.9	31.4	17.2	21.5	24.8	35.6	31.3	44.5
	(2.8)	(3.6)	(3.6)	(3.5)	(3.5)	(3.3)	(5.2)	(4.2)	(5.0)	(9.1)
n	371	218	204	294	189	259	116	218	145	51
10th grade	25.5	21.5	21.7	44.9	24.0	23.4	28.0	33.2	23.4	43.8
	(2.6)	(3.3)	(3.4)	(3.3)	(3.5)	(3.0)	(4.7)	(3.7)	(4.1)	(7.3)
n	476	262	241	366	241	342	155	266	182	81
11th grade	31.2	26.3	34.1	44.8	26.8	29.1	33.8	35.0	28.6	54.0
	(2.6)	(3.8)	(3.9)	(3.4)	(3.7)	(3.1)	(4.8)	(3.7)	(4.4)	(7.2)
n	509	227	247	366	239	355	166	277	181	85
12th grade	41.3	39.3	36.8	51.7	36.3	41.8	40.5	47.3	38.4	59.2
	(2.5)	(3.8)	(3.6)	(3.1)	(3.7)	(3.1)	(4.4)	(3.6)	(4.5)	(6.6)
n	645	274	304	454	288	431	215	333	198	100

Standard errors are in parentheses.

Students in extended 12th grade and those not assigned to grade levels are not included here because the samples were too small to disaggregate.

The difference between males and females who received life skills training was substantial. As seen in Table 6-4, at every grade, 20 to 30 percentage points more females were provided occupational therapy or life skills training ($p<.001$). From 9th through 12th grades, 40% to 57% of females received occupational therapy, whereas only 18% to 36% of males received this service. It is likely that females have had greater interest in life skills training and/or that schools guided females in the traditional direction of life skills training via home economics courses.

With one exception, there were no differences among ethnic or socioeconomic groups in the receipt of life skills training. In 12th grade, students who were white (44%) or African American (43%) were significantly more likely than Hispanic youth (25%) to receive this type of service. The percentage of both white and African American youth being provided life skills training increased significantly between 11th and 12th grades ($p<.01$ for white students, and $p<.05$ for African American students), whereas no comparable increase occurred for Hispanic youth.

Table 6-4

STUDENTS WHO RECEIVED LIFE SKILLS TRAINING FROM THEIR SCHOOLS, BY DEMOGRAPHIC CHARACTERISTICS

	Gender		Ethnic Background			Household Income		
	Male	Female	White	African American	Hispanic	<$12,000	$12,000 - $25,000	>$25,000
Percentage receiving services in:								
9th grade	17.8	39.9	24.3	23.0	21.5	22.7	26.2	23.5
	(2.0)	(3.7)	(2.5)	(4.3)	(6.8)	(4.1)	(4.1)	(3.2)
n	1,267	797	1,165	374	220	400	470	760
10th grade	19.5	48.4	27.1	33.3	24.7	27.6	23.1	27.3
	(1.9)	(3.4)	(2.2)	(4.4)	(6.7)	(4.0)	(3.5)	(2.9)
n	1,607	1,007	1,532	460	271	496	579	997
11th grade	26.0	50.1	33.9	29.4	30.6	32.5	29.7	33.9
	(2.1)	(3.5)	(2.3)	(4.4)	(7.3)	(4.2)	(3.7)	(3.0)
n	1,608	1,044	1,614	430	267	499	598	1,053
12th grade	36.4	57.3	43.6	43.0	25.1	42.3	41.3	43.5
	(2.1)	(3.1)	(2.2)	(4.4)	(6.8)	(4.1)	(3.8)	(2.8)
n	1,952	1,291	1,979	518	297	573	698	1,312
Not assigned to grade level	59.4	62.7	57.2	71.8	---	34.0	80.9	70.0
	(6.3)	(7.1)	(6.2)	(10.3)		(9.7)	(8.2)	(8.4)
n	228	148	208	82		87	91	106

Standard errors are in parentheses.

Percentages are reported separately only for categories with at least 25 students.

The difference in the receipt of life skills training between students who were and were not assigned to grade levels that was shown previously in Figure 6-3 may be explained in terms of gender and socioeconomic status (Table 6-4). Male students not assigned to grade levels were significantly more likely than their counterparts at grade levels to receive life skills training (59% vs. no more than 36%; $p<.001$), whereas females received life skills training at similar levels regardless of assignment. Similarly, among students not at grade levels, those from families with incomes of $12,000 or higher were more likely than students from families with incomes below $12,000 to receive life skills training. Students from higher income levels who were not assigned to grade levels also were significantly more likely to receive life skills training than their counterparts in grade-level programs ($p<.001$).

Typically, students with fewer hours in regular education classes were more likely to receive life skills training (Table 6-5). However, this trend did not continue in 12th grade. The percentage of students in 12th grade spending more than 20 hours a week in regular education classes who received life skills training significantly increased over the level in 11th grade (43% vs. 30%; $p<.01$), eliminating the relationship between life skills training and time spent in regular education.

Table 6-5

STUDENTS WHO RECEIVED LIFE SKILLS TRAINING FROM THEIR SCHOOLS, BY HOURS IN REGULAR EDUCATION

		Hours Per Week in Regular Education:				
		0	1-10	11-20	21-30	>30
Percentage receiving services in:						
9th grade		33.1	28.6	28.3	19.4	24.9
		(6.6)	(4.3)	(4.1)	(2.9)	(5.6)
	n	189	366	423	857	229
10th grade		35.6	28.3	36.1	25.7	22.2
		(6.3)	(4.2)	(3.8)	(2.8)	(4.7)
	n	223	417	564	1,071	328
11th grade		41.2	33.2	37.9	30.6	29.6
		(6.1)	(4.7)	(3.7)	(3.0)	(5.0)
	n	253	388	504	1064	336
12th grade		46.6	40.7	42.3	43.7	43.2
		(5.1)	(4.4)	(3.4)	(3.0)	(5.3)
	n	368	452	780	1219	368
Not assigned to grade level		62.7	49.9	---	---	---
		(5.6)	(13.1)			
	n	255	55			

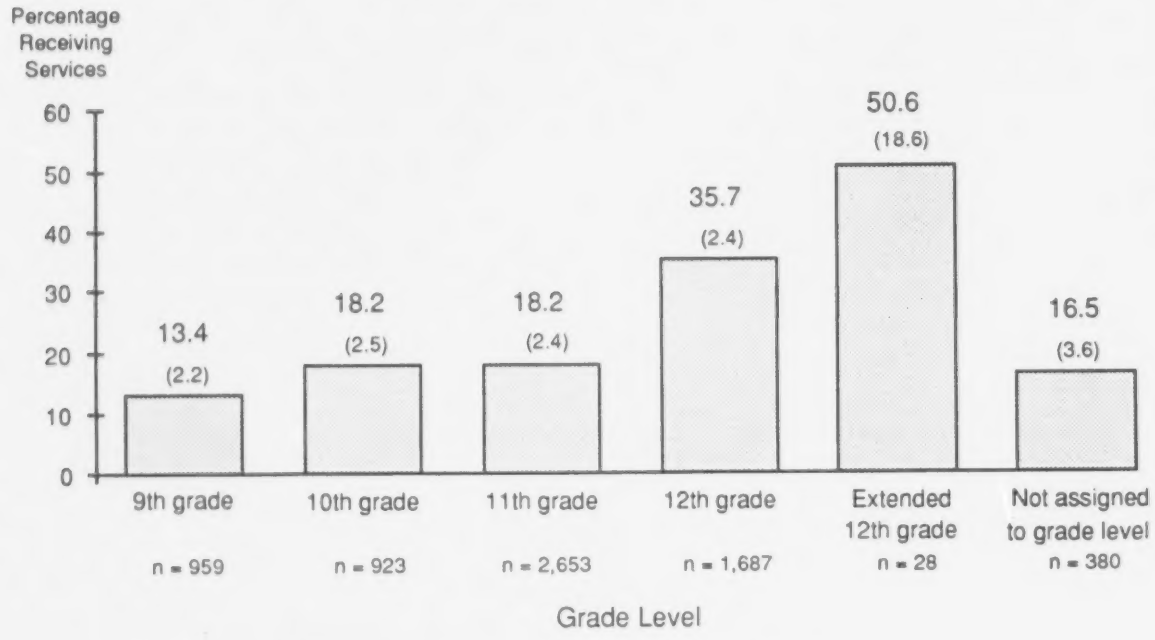
Standard errors are in parentheses.

Percentages are reported separately only for categories with at least 25 students.

Tutor, Reader, and Interpreter Services

This category of service involves assistance from three kinds of human aides. Tutors generally provide academic support and can be trained professionals or peers provided as tutors by the schools to any students who need such help. Readers are most often provided to students with visual impairments, but may also assist those with physical or other disabilities that challenge their ability to read. Interpreters most commonly assist students with hearing impairments who communicate with sign language. Students with some kinds of speech impairments may also require interpreter services. Readers should be aware of the diversity of assistance that is included when we refer to this category of service.

Figure 6-4 shows that the percentage of students receiving tutor, reader, or interpreter services was not high at any grade level. However, receipt of such services increased markedly for students in 12th grade; 18% of 11th-grade students received such support, compared with 36% in 12th grade ($p<.001$). For those students in an extended 12th grade, tutoring continued to be a frequent service; 51% of these students received tutor, reader, or interpreter services. In contrast, only 17% of students not assigned to grade levels received tutor, reader, or interpreter services. This percentage was similar to those of students at lower



Standard errors are in parentheses.

FIGURE 6-4 STUDENTS WHO RECEIVED HELP FROM A TUTOR, READER, OR INTERPRETER FROM THEIR SCHOOLS, BY GRADE LEVEL

grade levels—a much lower rate than for 12th-graders. It is unlikely that most students not assigned to a grade level would be held to the same graduation requirements as 12th-graders; therefore, they may not have required tutoring to graduate.

Although the receipt of tutoring, reader, or interpreter services increased through the grades for all youth with disabilities, there was considerable variation between disability categories as to the frequency with which youth received these types of services (Table 6-6). Students who were deaf were more likely to receive these services than any other disability group ($p<.05$ to $p<.001$); 67% of deaf students in 9th and 10th grades; 76% in 11th grade, and 78% in 12th grade received these services. Students who were hard of hearing also more commonly received this form of support than other students. As mentioned previously, this assistance was most likely from interpreters. Students with visual impairments also received these services with greater frequency than most, although the assistance was likely to be from a reader rather than an interpreter. Among students with learning, emotional, or speech disabilities, 20% or fewer received this form of support before 12th grade; for those with speech impairments, no more than 23% received support at any grade level.

Table 6-6

STUDENTS WHO RECEIVED HELP FROM TUTORS, READERS, OR INTERPRETERS FROM THEIR SCHOOLS, BY DISABILITY CATEGORY

	Learning Disabled	Emotionally Disturbed	Speech Impaired	Mentally Retarded	Visually Impaired	Hard of Hearing	Deaf	Orthopedically Impaired	Other Health Impaired	Multiply Handicapped
Percentage receiving services in:										
9th grade	15.0	8.8	6.2	9.5	26.6	38.7	67.6	14.5	20.7	---
	(3.4)	(3.2)	(3.0)	(3.4)	(6.4)	(6.2)	(8.7)	(4.5)	(6.2)	
n	180	128	106	121	77	101	48	104	70	
10th grade	19.7	9.0	6.1	17.5	26.6	42.0	67.0	23.0	23.6	---
	(4.0)	(3.7)	(3.4)	(3.9)	(6.0)	(5.9)	(9.1)	(5.9)	(7.0)	
n	164	100	79	155	93	117	45	86	61	
11th grade	18.7	15.5	9.9	15.8	36.4	45.8	75.5	21.8	19.3	22.2
	(3.4)	(5.1)	(4.4)	(4.0)	(7.2)	(6.1)	(7.5)	(5.4)	(6.3)	(8.8)
n	212	86	77	144	74	117	56	101	69	42
12th grade	35.6	33.5	23.3	35.5	50.7	68.6	77.9	33.2	51.9	31.0
	(3.4)	(5.2)	(5.0)	(3.9)	(6.2)	(4.4)	(5.3)	(5.4)	(7.4)	(9.7)
n	388	166	139	295	116	198	106	146	86	47

Standard errors are in parentheses.

Students in extended 12th grade and those not assigned to grade levels are not included here because the samples were too small to disaggregate. Percentages are reported separately only for categories with at least 25 students.

The provision of tutor, reader, or interpreter services was not related to demographic factors. Similarly, a comparison of the receipt of tutoring, reader, or interpreter services based on the number of hours in regular education classes for any single grade did not reveal any significant differences (Table 6-7). However, significant increases between 11th and 12th grade for students with more than 10 hours in regular education were found ($p<.01$). Again, perhaps students with more classes in regular education were those most likely to be earning credits toward graduation and those who could benefit from tutoring in order to pass the classes necessary to graduate.

Table 6-7

STUDENTS WHO RECEIVED HELP FROM TUTORS, READERS, OR INTERPRETERS FROM THEIR SCHOOLS, BY HOURS IN REGULAR EDUCATION

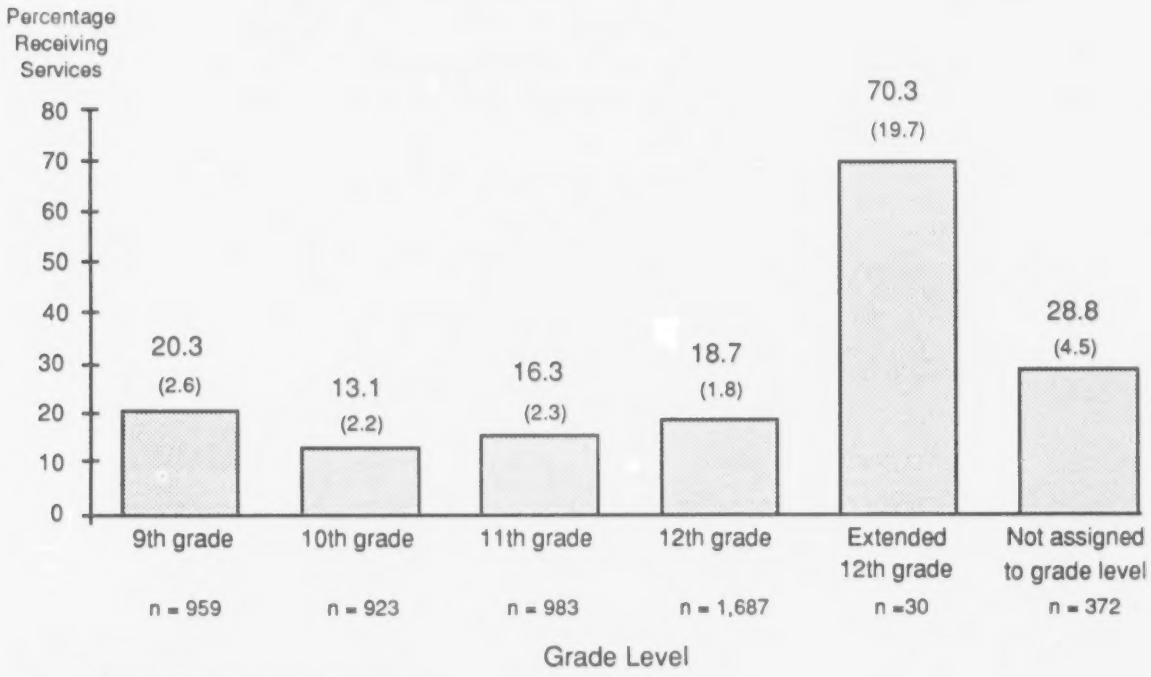
	Hours Per Week in Regular Education:				
	0	1-10	11-20	21-30	>30
Percentage receiving service in:					
9th grade	9.0	9.4	14.8	16.4	10.7
	(5.5)	(4.1)	(4.7)	(4.0)	(6.0)
n	96	171	203	377	102
10th grade	17.8	18.0	13.0	20.3	23.1
	(7.8)	(5.6)	(4.2)	(4.4)	(8.6)
n	77	152	208	367	102
11th grade	16.4	24.6	15.3	17.2	20.2
	(7.1)	(6.4)	(4.1)	(4.1)	(8.5)
n	97	162	257	349	90
12th grade	30.5	23.9	30.8	42.5	57.5
	(6.3)	(4.9)	(4.1)	(4.5)	(9.5)
n	200	254	436	483	115
Not assigned to grade level	16.9	11.0	---	---	---
	(4.4)	(8.2)			
n	255	55			

Standard errors are in parentheses.
Percentages are reported separately only for categories with at least 25 students.

Personal Counseling

Personal counseling or therapy includes a wide variety of psychological, emotional, and social support, including group counseling, individual psychiatric counseling, social work services, substance abuse therapy, and others, which could be provided by a range of professionals in or through the schools. As such, personal counseling could be widely applicable to many students with disabilities.

Figure 6-5 shows that personal counseling was received by only 13% to 20% of youth with disabilities in 9th through 12th grades. Provision of counseling services was only marginally higher for students not assigned to grade levels (29%). Clearly, despite the variety of supports that could be included in this category of service, they were not widely used by secondary school students with disabilities. The exception was students in extended 12th grade, among whom 70% received personal counseling.



Standard errors are in parentheses.

FIGURE 6-5 STUDENTS WHO RECEIVED PERSONAL COUNSELING FROM THEIR SCHOOLS, BY GRADE LEVEL

Youth with serious emotional disturbances were the most likely to receive counseling services (Table 6-8). One-third to 39% of youth with serious emotional disturbances across the grade levels received personal counseling or therapy from their schools; they were more likely to receive these services in 11th and 12th grade than any other disability group. Still, the vast majority of students whose primary disability involved emotional issues were not receiving personal counseling from their schools, although counseling may have been received from other sources (47% and 39%, respectively) with 22% and 29% receiving these services in 11th and 12th grade. Youth with speech impairments were the least likely overall to receive personal counseling.

Table 6-8

STUDENTS WHO RECEIVED PERSONAL COUNSELING FROM THEIR SCHOOLS, BY DISABILITY CATEGORY

		Learning Disabled	Emotionally Disturbed	Speech Impaired	Mentally Retarded	Visually Impaired	Hard of Hearing	Deaf	Orthopedically Impaired	Other Health Impaired	Multiply Handicapped
Percentage receiving services in:											
9th grade		20.9	33.8	3.0	13.7	11.5	9.8	19.8	19.4	18.8	---
		(3.9)	(5.4)	(2.1)	(4.0)	(4.6)	(3.8)	(7.5)	(5.0)	(6.0)	
	n	180	128	106	121	77	101	48	104	70	
10th grade		7.8	37.0	8.7	15.7	10.0	11.6	18.2	19.8	17.5	---
		(2.7)	(6.2)	(4.1)	(3.7)	(4.0)	(3.8)	(7.4)	(5.6)	(6.4)	
	n	164	100	79	155	93	117	45	86	61	
11th grade		14.0	34.9	13.1	17.5	15.3	17.8	18.9	12.1	12.9	22.4
		(3.0)	(6.6)	(4.9)	(4.1)	(5.4)	(4.6)	(6.8)	(4.3)	(5.2)	(8.7)
	n	217	86	77	144	74	117	56	101	69	42
12th grade		15.8	39.2	9.4	20.1	17.2	26.0	31.2	24.1	28.7	29.1
		(2.4)	(5.0)	(3.2)	(3.0)	(4.9)	(4.3)	(6.4)	(4.7)	(6.4)	(9.2)
	n	388	166	139	295	116	198	106	146	86	47

Standard errors are in parentheses.
Percentages are reported separately only for categories with at least 25 students.

There were no differences between students of different ethnic or socioeconomic groups in the provision of personal counseling services.

There were no marked gender differences in receipt of personal counseling until 12th grade (Table 6-9), when females were significantly more likely than males to receive counseling (26% vs. 16%; $p<.05$). However, males not assigned to grade levels were significantly more likely than males at grade levels to receive personal counseling (32% vs. 16% in 12th grade; $p<.05$). Students with significant behavior problems who were not assigned to regular grade-level programs might be expected to receive more personal counseling than other students.

Consistent with this interpretation, Table 6-10 shows that there was a trend of personal counseling being provided more often for youth in grade-level programs with fewer hours in regular education classes. For example, between 26% and 30% of students with no regular special education classes received personal counseling, compared with 3% to 23% of students spending more than 30 hours per week in regular education classes.

Table 6-9

MALES AND FEMALES WHO RECEIVED PERSONAL COUNSELING FROM THEIR SCHOOLS

		Males	Females
Percentage receiving services in:			
9th grade		21.8	17.4
		(3.2)	(4.2)
	n	589	361
10th grade		13.2	12.9
		(2.6)	(3.8)
	n	585	337
11th grade		16.4	16.1
		(2.8)	(4.1)
	n	589	378
12th grade		15.8	25.6
		(2.1)	(3.6)
	n	1,003	643
Not assigned to grade level		31.5	24.3
		(6.0)	(6.4)
	n	225	143

Standard errors are in parentheses.

Table 6-10

STUDENTS WHO RECEIVED PERSONAL COUNSELING FROM THEIR SCHOOLS, BY HOURS IN REGULAR EDUCATION

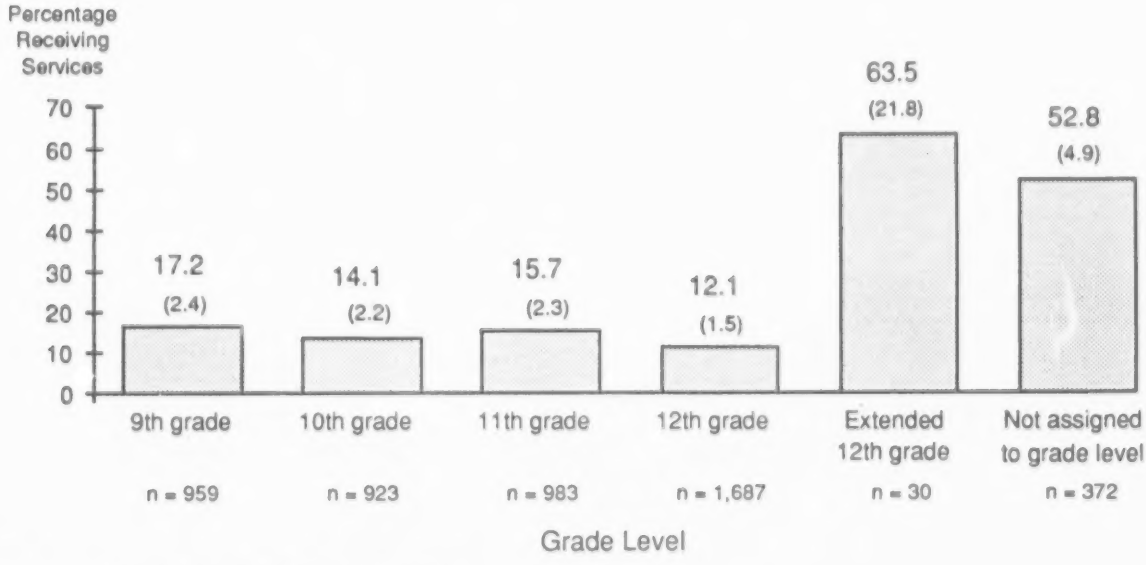
		Hours Per Week in Regular Education:				
		0	1-10	11-20	21-30	>30
Percentage receiving services in:						
9th grade		26.8	27.5	21.0	15.7	17.4
		(8.5)	(6.2)	(5.4)	(3.9)	(7.3)
	n	96	172	205	375	102
10th grade		26.5	22.0	14.4	9.1	3.4
		(8.7)	(6.0)	(4.4)	(3.1)	(3.7)
	n	76	152	209	369	101
11th grade		30.3	21.2	16.1	12.5	11.1
		(9.1)	(6.0)	(4.2)	(3.5)	(6.6)
	n	99	167	262	356	91
12th grade		28.7	20.8	13.9	17.5	23.1
		(6.0)	(4.3)	(2.9)	(3.2)	(7.4)
	n	222	278	472	507	128
Not assigned to grade level		26.5	36.5	---	---	---
		(5.2)	(12.8)			
	n	255	55			

Standard errors are in parentheses.
Percentages are reported separately only for categories with at least 25 students.

Speech/Language Therapy

Speech/language therapy can include direct training with students in the area of articulation, vocabulary expansion, and oral motor exercises. For severely handicapped students, services may include training in the use of alternative communication systems and adaptive aids, such as communication boards. Speech/language services are a very specialized type of service, but one that has been necessary for a variety of youth with disabilities beyond those with speech impairments as a primary disability, in that speech difficulties may occur in combination with other disabilities.

Figure 6-6 shows that between 12% and 17% of youth with disabilities who were in grade-level programs received speech/language therapy in a single year in high school. Students in the second year of 12th grade were the most likely group to receive speech therapy (64%, $p<.001$). Among students not assigned to grade levels, 53% received speech therapy ($p<.001$ compared with students at grade levels). This finding, again, probably reflects the fact that these students were more severely disabled and probably had multiple or secondary disabilities requiring treatment so that the students could benefit from their educational program.



Standard errors are in parentheses.

FIGURE 6-6 STUDENTS WHO RECEIVED SPEECH/LANGUAGE THERAPY FROM THEIR SCHOOLS, BY GRADE LEVEL

Table 6-11 shows that speech therapy is provided to a wide variety of youth with disabilities. Students who were more likely to receive speech therapy were students classified as hearing impaired or multiply handicapped, as well as speech impaired; 69% to 81% of deaf students, 49% to 61% of students who were hard of hearing, 40% to 49% of students with multiple handicaps, and 46% to 52% of students with speech impairments received speech therapy. Youth with visual impairments, serious emotional disturbances, or learning disabilities were least likely to receive speech therapy. The differences between the categories most likely and least likely to receive speech and language services were significant at $p<.001$.

Table 6-11

STUDENTS WHO RECEIVED SPEECH/LANGUAGE THERAPY FROM THEIR SCHOOLS, BY DISABILITY CATEGORY

	Learning Disabled	Emotionally Disturbed	Speech Impaired	Mentally Retarded	Visually Impaired	Hard of Hearing	Deaf	Orthopedically Impaired	Other Health Impaired	Multiply Handicapped
Percentage receiving services in:										
9th grade	15.0	4.3	47.9	23.0	3.7	49.2	69.2	19.1	14.8	---
	(3.4)	(2.3)	(6.3)	(4.9)	(2.7)	(6.5)	(8.5)	(5.0)	(5.4)	
n	180	128	106	121	77	101	48	104	70	
10th grade	8.1	2.8	46.5	24.9	2.6	57.4	78.8	18.3	11.7	---
	(2.7)	(2.1)	(7.2)	(4.4)	(2.1)	(6.0)	(7.9)	(5.4)	(5.4)	
n	164	100	79	155	93	117	45	86	61	
11th grade	11.1	8.4	52.3	24.8	4.0	51.4	78.4	26.3	10.7	48.7
	(2.8)	(3.9)	(7.3)	(4.7)	(3.0)	(6.0)	(7.1)	(5.8)	(4.9)	(10.5)
n	217	86	77	144	74	117	56	101	69	42
12th grade	7.0	6.8	51.6	19.8	4.6	61.2	81.2	20.7	33.3	40.0
	(1.7)	(2.6)	(5.6)	(3.0)	(2.8)	(4.6)	(5.1)	(4.6)	(7.0)	(9.8)
n	388	166	139	295	116	198	106	146	86	47

Standard errors are in parentheses.

Percentages are reported separately only for categories with at least 25 students.

Table 6-12 shows that female students received speech/language therapy more often than males, especially in 9th and 12th grades ($p<.05$). Between 18% and 25% of females in grades 9 through 12 received speech/language therapy, whereas between 9% and 14% of males received such support. The differences between males and females did not hold for students not assigned to grade levels.

Table 6-12

STUDENTS WHO RECEIVED SPEECH/LANGUAGE THERAPY FROM THEIR SCHOOLS, BY DEMOGRAPHIC CHARACTERISTICS

	Gender		Ethnic Background			Household Income		
	Male	Female	White	African American	Hispanic	<$12,000	$12,000 - $25,000	>$25,000
Percentage receiving services in:								
9th grade	13.4	24.7	14.6	16.9	34.5	29.6	16.8	14.7
	(2.7)	(4.7)	(3.0)	(5.3)	(10.8)	(6.3)	(5.1)	(4.1)
n	589	361	519	192	105	198	207	326
10th grade	12.4	17.8	12.7	18.6	29.5	19.1	21.0	11.0
	(2.6)	(4.3)	(2.8)	(5.5)	(13.0)	(5.9)	(5.7)	(3.4)
n	585	337	532	176	94	172	203	337
11th grade	13.9	20.1	14.4	23.8	13.6	11.8	17.3	16.4
	(2.6)	(4.6)	(2.7)	(7.2)	(8.5)	(4.6)	(4.9)	(3.8)
n	589	378	620	147	96	186	219	388
12th grade	9.4	18.6	10.7	15.6	24.4	18.9	12.5	12.4
	(1.7)	(3.3)	(1.8)	(4.3)	(9.6)	(4.2)	(3.3)	(2.5)
n	1,003	643	1,022	262	124	296	358	660
Not assigned to grade level	52.4	53.4	58.2	42.9	49.3	53.2	56.1	58.7
	(6.4)	(7.4)	(6.7)	(11.1)	(21.8)	(10.3)	(10.3)	(9.1)
n	228	144	206	79	25	85	90	105

Standard errors are in parentheses.

Although Hispanic youth tended to receive speech/language therapy more often (14% to 34% of Hispanic youth) than other youth (11% to 24% for youth who were African American or white), the differences did not reach statistical significance at conventional levels because of the small number of Hispanic students. Household income did not appear to be related to the receipt of speech/language therapy.

Youth with more hours in regular education classes were less likely to receive speech/language therapy (Table 6-13) in all grades ($p<.05$ to $p<.01$). For example, 29% of 11th-grade students in self-contained programs received speech/language services, compared with 5% of students who spent 30 hours or more per week in regular education classes ($p<.05$). Similarly, among those who were not assigned to grade levels, students in special education classrooms for their entire school day were significantly more likely to get speech therapy than were those with at least some hours in regular education classes (64% vs. 18%, $p<.01$).

Table 6-13

STUDENTS WHO RECEIVED SPEECH/LANGUAGE THERAPY FROM THEIR SCHOOLS, BY HOURS IN REGULAR EDUCATION

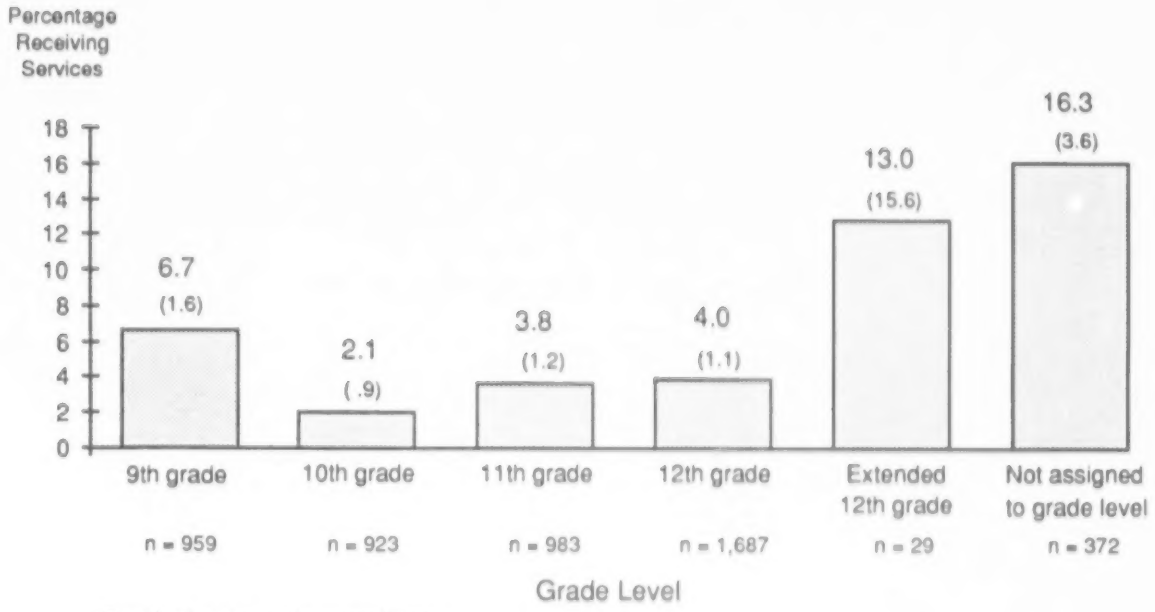
	Hours Per Week in Regular Education:				
	0	1-10	11-20	21-30	>30
Percentage receiving services in:					
9th grade	35.2	20.7	15.1	14.4	10.4
	(9.2)	(5.7)	(4.8)	(3.8)	(5.9)
n	96	172	205	375	102
10th grade	42.2	30.5	12.0	5.5	7.1
	(9.7)	(6.6)	(4.1)	(2.5)	(5.3)
n	77	153	208	367	100
11th grade	29.1	24.4	14.7	13.2	4.6
	(8.7)	(6.3)	(4.0)	(3.7)	(4.5)
n	98	168	255	347	87
12th grade	24.8	16.5	8.9	9.9	7.8
	(5.7)	(4.0)	(2.4)	(2.6)	(4.8)
n	223	280	470	498	123
Not assigned to grade level	64.0	18.5	---	---	---
	(5.6)	(10.1)			
n	255	55			

Standard errors are in parentheses.
Percentages are reported separately only for categories with at least 25 students.

Physical Therapy or Mobility Training

This category of service includes "physical therapy, mobility training, or other help with physical needs" provided by the schools. Physical therapy for students with disabilities is primarily concerned with gross motor, posture, and positioning problems. Mobility training may include training in the use of adaptive devices such as wheelchairs, walkers, standing tables, canes, etc., as well as direct treatments in range of motion and positioning. Other help with physical needs may support youth with a variety of health impairments (e.g., catheterization, assistance with oxygen supply for students with asthma). This category of service is referred to as "physical therapy" in the remainder of this chapter.

As a specialized service, physical therapy was provided to very few students with disabilities. Figure 6-7 shows that fewer than 7% of students at any grade level received physical therapy, as did 13% of students in the extended 12th grade. Students not assigned to grade levels also were more likely to receive physical therapy services than were students at grade levels (16%; $p<.05$).



Standard errors are in parentheses.

FIGURE 6-7 STUDENTS WHO RECEIVED PHYSICAL THERAPY FROM THEIR SCHOOLS, BY GRADE LEVEL

Table 6-14 shows that youth with orthopedic impairments and multiple handicaps were more likely to receive physical therapy than were students in other disability categories, as expected. With the exception of 10th grade, when 31% of students with orthopedic impairments received physical therapy, typically more than 40% of these students received physical therapy. Between 18% and 26% of youth with multiple handicaps received physical therapy in grades 11 and 12. Typically, fewer than 10% of youth in other disability categories received physical therapy. Youth with visual impairments were the only exception, with 19% and 21% receiving it in 11th and 12th grades.

There were no notable differences in who received physical therapy based on gender, ethnic group, or household income for any students.

There was a very strong relationship between the number of hours in regular education and the receipt of physical therapy. Table 6-15 shows that between 15% and 19% of youth who spent their entire school day in special classes received physical therapy. In contrast, for example, in 10th, 11th, and 12th grades fewer than 5% of students who spent more than 10 hours per week in regular education classes received physical therapy ($p<.05$). Similarly, among students not assigned to grade levels, those who were in special education classrooms for their entire school day were significantly more likely to get physical therapy or mobility training than were those with up to 10 hours per week in regular education classes (22% vs. 5%; $p<.05$).

Table 6-14

STUDENTS WHO RECEIVED PHYSICAL THERAPY FROM THEIR SCHOOLS, BY DISABILITY CATEGORY

	Learning Disabled	Emotionally Disturbed	Speech Impaired	Mentally Retarded	Visually Impaired	Hard of Hearing	Deaf	Orthopedically Impaired	Other Health Impaired	Multiply Handicapped
Percentage receiving services in:										
9th grade	6.7	2.8	.0	8.2	11.5	4.8	1.8	40.8	8.3	---
	(2.4)	(1.9)	(.0)	(3.2)	(4.6)	(2.7)	(2.5)	(6.2)	(4.3)	
n	180	128	106	121	77	101	48	104	70	
10th grade	.0	1.0	1.4	4.8	10.9	4.0	1.3	30.8	8.5	---
	(.0)	(1.3)	(1.7)	(2.2)	(4.2)	(2.4)	(2.2)	(6.5)	(4.7)	
n	164	100	79	155	93	117	45	86	61	
11th grade	2.4	.9	4.9	6.4	19.3	1.4	5.6	41.9	8.7	17.6
	(1.4)	(1.3)	(3.2)	(2.7)	(6.0)	(1.4)	(4.0)	(6.4)	(4.6)	(8.0)
n	217	86	77	144	74	117	56	101	69	42
12th grade	1.5	3.4	.0	9.2	21.0	.4	4.5	42.2	10.8	26.3
	(.9)	(2.2)	(.0)	(2.6)	(5.2)	(.7)	(3.0)	(5.5)	(4.8)	(8.8)
n	388	166	139	295	116	198	106	146	86	47

Standard errors are in parentheses.

Percentages are reported separately only for categories with at least 25 students.

Table 6-15

STUDENTS RECEIVED PHYSICAL THERAPY FROM THEIR SCHOOLS, BY HOURS IN REGULAR EDUCATION

	Hours Per Week in Regular Education:				
	0	1-10	11-20	21-30	>30
Percentage receiving services in:					
9th grade	14.6	13.1	1.8	5.3	3.8
	(6.8)	(4.7)	(1.8)	(2.4)	(3.7)
n	96	173	204	376	101
10th grade	18.7	1.8	.9	.8	.5
	(7.7)	(1.9)	(1.2)	(1.0)	(1.4)
n	76	153	208	366	99
11th grade	14.7	3.2	4.3	2.4	.6
	(6.8)	(2.6)	(2.4)	(1.7)	(1.6)
n	98	161	250	349	88
12th grade	16.0	5.4	1.5	.8	.1
	(5.2)	(2.7)	(1.2)	(.9)	(.7)
n	197	224	377	401	96
Not assigned to grade level	21.6	5.4	---	---	---
	(4.8)	(6.0)			
n	255	55			

Standard errors are in parentheses.

Percentages are reported separately only for categories with at least 25 students.

Planning for Transition to Adult Life

In the past few decades, employment of youth with disabilities and the provision of employment preparation services have been influenced by the fields of special education, vocational education and rehabilitation services. Government policy initiatives have been followed by legislation enacted over time that have increasingly emphasized the employment and postsecondary training needs of youth with disabilities. The concept of transition from school to adult life for youth with disabilities developed in the early 1980s and was articulated in the federal transition initiative (Will, 1984). Transition was defined as a bridge from the structure of the secondary school setting to employment—the defining characteristic of adult life. This definition was later broadened to include community living and social and interpersonal networks (Halpern, 1985). Further definition has described transition as an extended process of planning for adult life, including interrelated domains of education, postsecondary education and training, independent living, and recreation. Transition planning is expected to begin early in secondary school and involve students, parents, and personnel from schools and appropriate community agencies (Wehman, Kregel, Barcus, and Schalock, 1986).

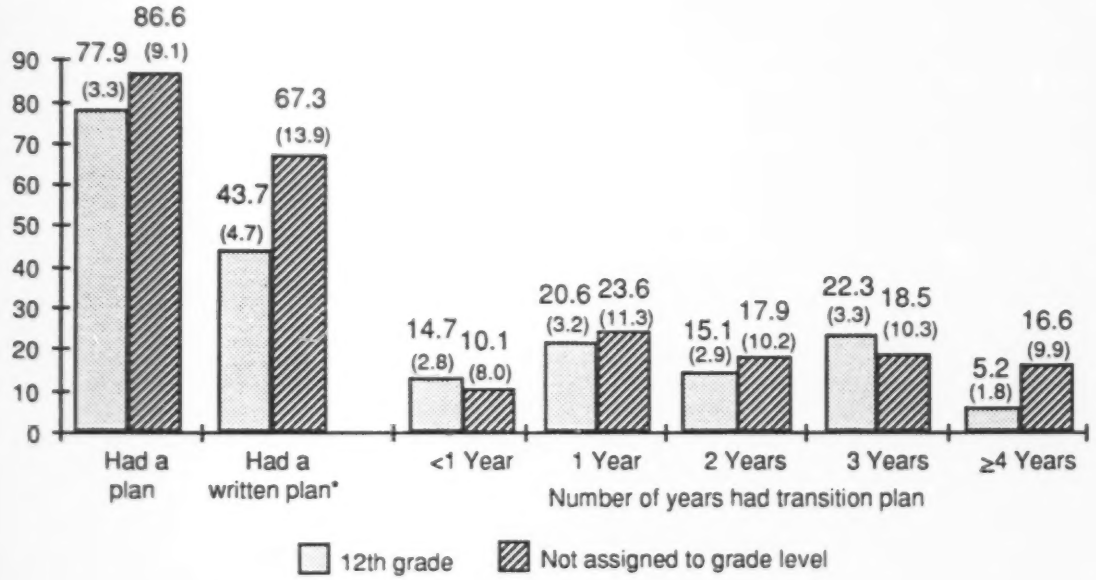
Transition from school to adult life was first mentioned in federal legislation in the Education of the Handicapped Amendments of 1983 (P.L. 99-199), which authorized funding for research and demonstration projects and a research and evaluation institute. This type of funding was reauthorized and expanded in 1986 with P.L. 99-457, and language intended to shape transition policy at the state level was included. However, because the legislation provided no federal definition, no mandate for providing transition services, and no funding beyond discretionary model demonstration projects, states were left to determine their own response to the initiative. As a result, some states developed exemplary services, while others did much less. It was not until 1990, with the reauthorization of the Individuals with Disabilities Education Act (IDEA), P.L. 101-476, that transition services for students in special education ages 16 and older were mandated and specified. Because the NLTS collected data on transition planning from schools from 1988 through 1990, before the mandating legislation, the transition services received by students in the study can be seen as schools' creative responses to the initiative, but not as their level of compliance with specific mandates. Thus, NLTS data can provide an important baseline against which to measure future transition planning efforts.

NLTS data on transition plans come from teachers of 12th-grade students who were familiar with the programs of sample students. Teachers completed survey questionnaires on the students' school programs, including items that could clarify the nature and extent of transition planning done on behalf of the students. Teachers were asked whether students had transition plans and when they were initiated. They also were asked to report on aspects of the process, including the persons and agencies who actively participated in the planning. The goals for students' transitions also were reported, as well as the contacts that were made on behalf of the students. Findings related to these aspects of transition planning are reported below.

The Extent of Transition Planning

The vast majority of secondary schools saw some role for themselves in supporting the transition of students with disabilities to adult roles; 96% of 12th-grade students with disabilities attended secondary schools that set goals beyond graduation for or with them, as did 98% of students not assigned to grade levels. There was little variation between the different disability groups as to whether their schools set postschool goals for them indicating that schools were fairly uniformly active in looking toward the postschool transitions of students with disabilities.

Despite this prevalence of postschool goals, fewer students actually had transition plans. Figure 6-8 shows that 78% of 12th-grade students with disabilities had transition plans, as did 87% of students not assigned to grade levels. This is a substantial proportion of youth to have been the subject of transition planning before federal law required schools to do transition planning.



Standard errors are in parentheses.
* Of those with a transition plan.

FIGURE 6-8 EXTENT OF TRANSITION PLANNING FOR 12TH-GRADE STUDENTS AND THOSE NOT ASSIGNED TO GRADE LEVELS

Although at the time of NLTS data collection, the law did not require schools to document transition planning in writing, written transition plans can be considered as preferable practice because goals and responsibility can be defined more clearly in a written document. Of those 12th-grade students who had transition plans, fewer than half had written plans (44%), indicating that transition planning was a fairly informal process for many students. Written plans were somewhat more common for students not assigned to grade levels (67% of those with plans), although the difference was not statistically significant because of small samples.

There is general agreement in the transition literature that transition plans should be longitudinal, spanning several years in school (Wehman, Kregel, and Barcus, 1985). Recommendations for the initiation of the process range from 18 months to 5 or 6 years before graduation, but 3 to 4 years is the most common. Annual reviews, updates, and evaluations of the plan are recommended. Few 12th-grade students (5%) had had transition plans for 4 years of secondary school. In contrast, 17% of students not assigned to grade levels had transition plans for 4 years.

Table 6-16 shows that the number of 12th-grade students who had transition plans varied between disability categories, ranging from 61% of youth with serious emotional disturbances to 89% of youth who were hearing impaired ($p<.05$). Among students with serious emotional disturbances who had transition plans, fewer had written plans (28%) than students in other categories. The finding that youth with serious emotional disturbances were the least likely to have plans formulated for their postschool life is disturbing in light of this group's high rates of dropping out of school and arrest, general pattern of job instability, and low rates of involvement in postsecondary training (Wagner, 1992).

Demographic characteristics of youth with disabilities did not significantly affect whether they had transition plans or when their transition plans were written. Table 6-17 depicts the percentages of youth with transition plans by the number of hours they attended regular education classes. Ninety-one percent of students who took all their classes in special education had transition plans, whereas only 68% of students who took most or all of their classes in regular education had transition plans ($p<.10$). Students with more than 30 hours in regular education classes per week were significantly less likely than those with fewer than 20 hours of regular education to have their transition plans written ($p<.05$). It appears that schools were more likely to have developed formal written plans for students with lower functional abilities. Although ultimately students who took all their classes in special education were more likely to have a transition plan, the planning appears to have begun later in the youths' schooling. For example, 37% of students in entirely self-contained programs had had a transition plan for less than 1 year, compared with 12% of students spending more than 30 hours per week in regular education classes.

Table 6-16

TRANSITION PLANNING IN 12TH GRADE, BY SELECTED DISABILITY CATEGORIES

	Learning Disabled	Emotionally Disturbed	Speech Impaired	Mentally Retarded	Hearing Impaired	Other
Percentage of students with teachers indicating:						
Transition planning had been done for student	77.8 (4.7)	61.0 (9.4)	72.8 (7.9)	84.4 (4.8)	89.2 (6.3)	77.8 (7.0)
The plan was in existence for						
< 1 year	16.2 (4.2)	3.1 (3.3)	15.1 (6.4)	13.1 (4.5)	18.7 (7.9)	19.4 (6.6)
1 year	19.0 (4.5)	18.8 (7.5)	22.0 (7.4)	24.1 (5.6)	40.8 (10.0)	24.0 (7.2)
2 years	14.7 (4.0)	9.3 (5.6)	10.2 (5.4)	20.3 (5.3)	5.7 (4.7)	13.1 (5.7)
3 years	22.6 (4.7)	26.9 (8.5)	15.8 (6.5)	21.9 (5.4)	18.9 (8.0)	16.2 (6.2)
≥ 4 years	5.3 (2.5)	2.9 (3.2)	9.7 (5.3)	5.0 (2.9)	5.0 (4.5)	5.0 (3.6)
n	168	69	91	118	70	95
Student had a written transition plan	40.2 (6.8)	28.4 (11.2)	45.2 (13.7)	54.1 (7.2)	45.4 (11.1)	60.3 (9.1)
n	111	41	36	99	61	77

Standard errors are in parentheses.

Table 6-17

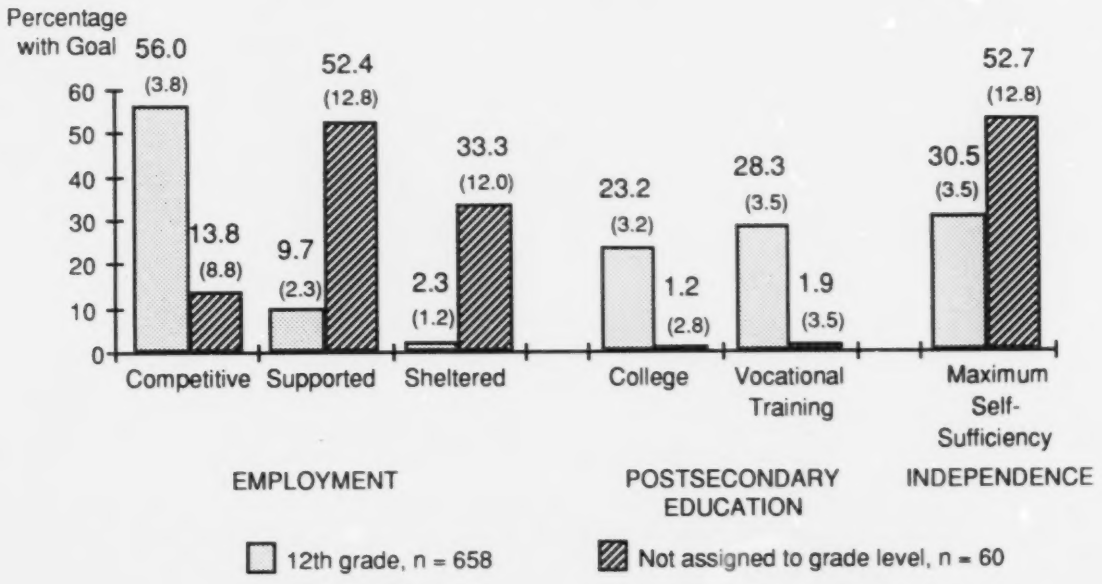
TRANSITION PLANNING IN 12TH GRADE, BY HOURS IN REGULAR EDUCATION

	Hours Per Week in Regular Education Classes:				
	0	1-10	11-20	21-30	>30
Percentage of students with teachers indicating:					
Transition planning had been done for student	91.0 (8.6)	79.3 (10.1)	79.4 (6.3)	76.1 (5.3)	67.9 (9.8)
The plan was in existence for:					
< 1 year	37.4 (14.5)	9.9 (7.5)	17.0 (5.8)	10.8 (3.9)	12.1 (6.9)
1 year	18.9 (11.7)	21.7 (10.3)	31.0 (7.2)	14.0 (4.3)	12.8 (7.0)
2 years	23.6 (12.7)	10.9 (7.8)	17.9 (6.0)	15.4 (4.5)	9.3 (6.1)
3 years	9.2 (8.6)	33.0 (11.8)	9.7 (4.6)	29.0 (5.7)	25.9 (9.2)
≥ 4 years	1.9 (4.1)	3.8 (4.8)	3.6 (2.9)	7.0 (3.2)	7.8 (5.7)
Student had a written transition plan	41.1 (8.6)	51.6 (10.1)	53.0 (6.3)	40.8 (5.3)	16.9 (9.8)
n	53	79	138	232	84

Standard errors are in parentheses.

Transition Goals

In the literature on transition planning, best practices include identifying appropriate vocational options, establishing annual goals and short-term objectives, and identifying concrete outcomes. What types of postschool goals typically were set by or for students with disabilities? We found that goals for students were set in three domains: employment, postsecondary education or training, and general independence, with the emphasis on those domains being very different for 12th-grade students and students not assigned to grade levels. In the employment domain, Figure 6-9 shows that competitive employment was the most likely goal to be set for 12th-grade students with disabilities, with 56% having this goal ($p<.001$ compared with other goals for those students). In contrast, only 14% of students not assigned to grade levels had a goal of competitive employment ($p<.001$ compared with 12th-graders). Sheltered work was the least common goal of 12th-graders (2%), but was the goal of one-third of students not assigned to grade levels ($p<.01$). Similarly, supported employment was the postschool goal of only 10% of 12th-graders, but of more than half of students not assigned to grade levels ($p<.01$). The figures for supported employment for students not assigned to grade levels indicate its increased importance as a viable postschool option in the 6 years since the introduction of supported employment as a transition outcome option (Will, 1984).



Standard errors are in parentheses.

FIGURE 6-9 PRIMARY TRANSITION GOAL OF STUDENTS WITH DISABILITIES IN 12TH GRADE AND NOT ASSIGNED TO GRADE LEVELS

In the postsecondary education domain, college (2-year or 4-year) was a transition goal of almost one-fourth of 12th-grade students, surpassed slightly by vocational training (28%). These goals were much less common among students not assigned to grade levels (1% and 2%; $p<.001$). Maximum self-sufficiency was a goal of 30% of 12th-grade students and 53% of students not assigned to grade levels, not a statistically significant difference.

The emphasis on employment relative to postsecondary education reflects the actual early postschool activities of young people with disabilities. Previous NLTS work has demonstrated that among youth with disabilities who had been out of secondary school less than 2 years, 70% were competitively employed (D'Amico, 1991). In contrast, only 14% had attended any kind of postsecondary education or training in the previous year; only 5% had been enrolled in a 2-year or 4-year college (Butler-Nalin and Wagner, 1991).

Table 6-18 shows that the employment emphasis was particularly apparent for students with learning disabilities (59%), serious emotional disturbances (64%), or mental retardation (53%). That a majority of youth with mental retardation had competitive employment as their postschool goal is an important finding because historically they have been thought of as incapable of competitive employment. Students with mental retardation were more likely than any other disability group to have goals to attend a sheltered workshop (9%; $p<.05$) or find supported employment (31%; $p<.001$). The emphasis on goals of competitive employment

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Table 6-18

PRIMARY GOAL OF STUDENTS' TRANSITION PLANNING IN 12TH GRADE, BY SELECTED DISABILITY CATEGORIES

	Learning Disabled	Emotionally Disturbed	Speech Impaired	Mentally Retarded	Hard of Hearing	Other
Percentage of students with goal to:						
Become competitively employed	58.6 (5.4)	64.1 (8.9)	38.9 (8.2)	53.1 (6.4)	35.1 (9.5)	30.1 (7.3)
Attend sheltered workshop	.0 (.0)	2.2 (2.7)	.0 (.0)	8.9 (3.7)	.0 (.0)	14.7 (5.7)
Be in supported employment	3.5 (2.0)	5.1 (4.1)	6.5 (4.2)	30.9 (5.9)	9.3 (5.8)	20.0 (6.4)
Attend college	27.8 (4.9)	20.2 (7.4)	35.4 (8.1)	4.0 (2.5)	43.4 (9.8)	31.9 (7.5)
Attend vocational training program	32.4 (5.2)	16.8 (6.9)	27.7 (7.5)	20.1 (5.2)	36.8 (9.6)	21.7 (6.6)
Be maximally self-sufficient	25.0 (4.8)	22.0 (7.6)	26.6 (7.5)	49.7 (6.4)	52.3 (9.9)	43.1 (7.9)
n	177	76	103	125	73	104

Standard errors are in parentheses.

Percentages are reported separately only for categories with at least 25 students. Multiple responses possible.

and supported employment programs for students with mental retardation indicates a more positive and potentially productive outlook on adult life for youth with mental retardation than was previously expected for these youth.

Although competitive employment also was an important goal of youth with hearing impairments (35%), college attendance (43%) and vocational training (37%) were goals emphasized by these students more than by others. Maximum self-sufficiency was a goal of half or more of students with mental retardation or hearing impairments.

Whereas postschool goals varied significantly in a number of ways for youth with disabilities according to their particular disability, there was no statistically significant variation according to youths' demographic characteristics. However, a sizable difference between males and females in their goal of competitive employment (61% vs. 46%; $p<.10$) does reflect a difference in the actual postschool experiences of youth. In their first 2 years out of secondary school, 53% of males were competitively employed, compared with 30% of females ($p<.001$; D'Amico, 1991).

Table 6-19 shows little variation in transition goals by the amount of time students spent in regular education classes, except for having college as a postschool goal. Students who spent more hours in regular education classes were more likely to have college as their postschool goal (e.g., 28% for students spending 21 to 30 hours in regular education, compared with 10% for students spending up to 10 hours; $p<.05$). However, regardless of the number of hours a student spent in regular education classes, competitive employment remained the most common goal beyond high school.

Table 6-19

PRIMARY GOAL OF STUDENT'S TRANSITION PLANNING IN 12TH GRADE, BY HOURS IN REGULAR EDUCATION

	Hours Per Week in Regular Education Classes				
	0	1-10	11-20	21-30	>30
Percentage of students with goal to:					
Be competitively employed	52.7 (14.6)	49.1 (12.4)	66.8 (7.1)	54.4 (6.0)	44.6 (9.9)
Attend sheltered workshop	9.9 (8.7)	1.8 (3.3)	4.8 (3.2)	.0 (.0)	.0 (.0)
Be in supported employment	26.4 (12.9)	17.0 (9.3)	7.1 (3.9)	5.2 (2.7)	4.7 (4.2)
Attend college	18.6 (11.4)	10.0 (7.4)	20.1 (6.1)	28.5 (5.4)	34.7 (9.5)
Attend vocational training program	37.6 (14.2)	21.4 (10.2)	28.1 (6.8)	32.8 (5.6)	22.0 (8.3)
Be maximally self-sufficient	43.3 (14.5)	37.7 (12.0)	34.3 (7.2)	25.0 (5.2)	21.6 (8.2)
n	54	83	149	254	91

Standard errors are in parentheses.

Participants in Transition Planning

Although schools can set goals for youth, clearly articulating the steps needed to achieve the goals is believed to improve the likelihood that the goals will be achieved. The articulation of postschool goals and the processes necessary to achieve the goals are intended to be developed cooperatively by vocational and special educators, parents, students, and appropriate representatives of adult service agencies, including vocational training programs, community colleges, job placement programs, mental health agencies, social service agencies providing residential, leisure, and support services, and state vocational rehabilitation (VR), as appropriate to the goals and abilities of individual students. All participants should be involved in the initial planning and actively participate at appropriate stages of the process. Responsible agencies, their representatives, and timelines should be specified (Brody-Hasazi, Salembir, and Finck, 1983; Halpern, 1985; Schalock, 1986; Wehman, Kregel, and Barcus, 1985).

The NLTS asked teachers "who actively participated in transition planning" for the student. Table 6-20 shows that the transition planning process for 12th-grade students and those not assigned to grade levels involved primarily school personnel and family members. The special

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Table 6-20

PARTICIPANTS IN TRANSITION PLANNING FOR 12TH-GRADE STUDENTS AND THOSE NOT ASSIGNED TO GRADE LEVELS

	In 12th Grade	Not Assigned to Grade Level
Percentage of students whose transition planning involved:		
Regular education academic teacher	18.4 (3.4)	3.9 (5.5)
Regular education vocational teacher	28.8 (4.0)	4.3 (5.8)
Special education teacher	84.4 (3.2)	86.6 (9.8)
School administrator	16.1 (3.2)	45.9 (14.3)
School counselor	67.8 (4.1)	33.6 (13.5)
Parent/guardian	61.5 (4.3)	81.8 (11.1)
Student	76.9 (3.7)	65.6 (13.6)
Vocational rehabilitation counselor	25.6 (3.8)	37.2 (13.9)
Other agency staff	2.7 (1.4)	22.5 (12.0)
n	507	48

Standard errors are in parentheses.

education teacher was the individual from the school who was typically most involved (for 84% and 87% of students). School counselors also were common participants, being involved in transition planning for two-thirds of students in 12th grade and one-third of those not assigned to grade levels ($p<.05$). There were other interesting differences in the participation of school personnel for students who were and were not at grade levels. School administrators were significantly more likely to be involved in the transition planning process for students not assigned to grade levels than for 12th-graders (46% vs. 16%; $p<.05$). In contrast, regular education teachers were significantly more likely to be involved for 12th-grade students (18% vs. 4% for academic teachers, 29% vs. 4% for vocational teachers; $p<.01$ and $p<.001$).

Students and parents actively participated in the process of transition planning for a majority of students. Among 12th-graders, 77% of students were involved in their own transition planning and 62% of students had their parents involved. By comparison, 66% of students not assigned to grade levels and 82% of their parents were involved in transition planning. There were no statistically significant differences in the involvement of parents or students between 12th-graders and students not assigned to grade levels.

This level of participation by students and parents is encouraging. However, the interpretation of "active participation" by respondents may vary from minimal attendance, for example, to expressing preferences, monitoring progress, or contacting resources.

In the late 1980s, the transition planning process did not commonly involve representatives from the world of work, but was more typically a goal-setting and planning process by the schools. Rarely were representatives of community agencies involved in the transition-planning process. Vocational rehabilitation counselors actively participated in the planning process for only 26% of 12th-grade students and 37% of those not assigned to grade levels. That both vocational teachers and vocational rehabilitation counselors participated for fewer than one-third of students is of concern, given that employment was the transition goal for most students with disabilities, and vocational teachers and rehabilitation counselors potentially could provide substantial guidance in the process. Staff from other community agencies essentially were not involved for 12th-grade students (3%), but participated in the process for somewhat more students who were not at grade levels (22%, not a statistically significant difference).

The level of involvement of some participants depended on the student's disability, as shown in Table 6-21. A special education teacher virtually always was involved in the planning process with youth with mental retardation (99%). Youth with speech impairments were significantly less likely to have a special education teacher involved in their transition planning (55%; $p<.001$) because they were less involved in special education classes than any other group of students (see Chapter 3). Similarly, school administrators were less involved in transition planning for students with speech impairments (8%) than for those with other kinds of disabilities (36%; $p<.01$). Vocational rehabilitation staff were significantly more likely to be involved in transition planning for students with mental retardation, hearing impairments, or

Table 6-21

PARTICIPANTS IN TRANSITION PLANNING FOR 12TH GRADE STUDENTS, BY DISABILITY CATEGORY

	Learning Disabled	Emotionally Disturbed	Speech Impaired	Mentally Retarded	Hearing Impaired	Other
Percentage of students whose transition planning involved:						
Regular education academic teacher	21.3 (5.1)	18.3 (8.6)	20.6 (8.2)	9.4 (4.1)	16.8 (8.1)	16.7 (6.5)
Regular education vocational teacher	28.8 (5.7)	35.4 (10.6)	22.9 (8.5)	28.8 (1.7)	27.1 (9.6)	23.3 (7.3)
Special education teacher	81.5 (4.8)	78.9 (9.1)	54.6 (10.1)	98.6 (1.7)	83.5 (8.0)	91.5 (4.8)
School administrator	13.8 (4.3)	22.5 (9.3)	7.5 (5.4)	20.0 (5.7)	17.2 (8.2)	36.2 (8.3)
School counselor	71.5 (5.6)	76.0 (9.5)	74.1 (8.9)	55.0 (7.1)	53.6 (10.8)	62.9 (8.4)
Parent/guardian	57.4 (6.2)	51.1 (11.1)	50.0 (10.1)	78.7 (5.8)	58.9 (10.7)	63.6 (8.4)
Student	76.0 (5.3)	79.2 (9.0)	63.2 (9.8)	79.6 (5.7)	79.7 (8.7)	86.5 (5.9)
Vocational rehabilitation counselor	22.0 (5.2)	9.0 (6.4)	16.1 (7.5)	36.5 (6.8)	49.8 (10.8)	56.8 (8.6)
Other agency staff	.3 (.7)	0 (.0)	0 (.0)	8.1 (3.9)	6.8 (5.5)	22.4 (7.2)
n	136	50	68	104	63	86

Standard errors are in parentheses.
Percentages are reported separately only for categories with at least 25 students.

other disabilities (i.e., physical, health, visual, and multiple handicaps) (36% to 57% of students) than for students with learning, emotional, or speech disabilities (9% to 22%; $p<.10$ to $p<.001$), which is consistent with the practice of VR to serve students with more severe disabilities (Wine, Hayward, and Wagner, 1993). Other agency staff were most likely to be involved for students in the NLTS category of other disability (i.e., physical, health, visual, and multiple handicaps) than other categories of disability (22% vs. 8% or fewer; $p<.10$ to $p<.001$) and probably represented agencies providing specialized services related to the students' specific disabilities.

There were no significant differences in the level of active participation of school personnel, community representatives, the students, or their families in the transition planning based on the students' individual or family characteristics, such as, gender, ethnicity, and income level. However, there was variation related to the number of hours students spent in regular education classes (Table 6-22). As expected, students who took more classes in regular education were significantly more likely to have a regular education teacher involved and less likely to have a special education teacher involved in the transition planning process than were students with most of their classes in special education ($p<.05$ to $p<.001$).

Table 6-22

PARTICIPANTS IN TRANSITION PLANNING FOR 12TH-GRADE STUDENTS, BY HOURS IN REGULAR EDUCATION

	Hours Per Week in Regular Education Classes				
	0	1-10	11-20	21-30	>30
Percentage of students whose transition planning involved:					
Regular education academic teacher	17.9 (12.4)	10.9 (8.1)	9.7 (5.0)	25.2 (6.1)	30.2 (11.5)
Regular education vocational teacher	8.1 (8.8)	14.5 (9.1)	30.3 (7.7)	38.3 (6.9)	33.8 (11.9)
Special education teacher	98.3 (4.2)	99.3 (2.1)	90.2 (5.0)	78.6 (5.8)	55.1 (12.5)
School administrator	6.8 (8.2)	9.9 (7.7)	19.8 (6.7)	12.9 (4.7)	28.0 (11.3)
School counselor	40.6 (15.9)	51.3 (13.0)	67.3 (7.9)	82.2 (5.4)	70.1 (11.5)
Parent/guardian	56.6 (16.1)	57.6 (12.8)	68.1 (7.8)	63.9 (6.8)	50.3 (12.5)
Student	57.2 (16.0)	87.0 (8.7)	76.8 (7.1)	79.5 (5.7)	75.6 (10.8)
Vocational rehabilitation counselor	38.2 (15.8)	34.0 (12.3)	32.0 (7.8)	16.2 (5.2)	15.5 (9.1)
Other agency staff	14.7 (11.5)	2.7 (4.2)	1.0 (1.6)	1.1 (1.5)	.2 (1.1)
n	47	69	123	181	64

Standard errors are in parentheses.

Contacts Made in Transition Planning

Students' teachers were asked whether a specified list of persons and organizations reflected appropriate postschool paths for a particular student (e.g., contacting a sheltered workshop might have been reported as appropriate for a student with mental retardation but not for a student with a mild learning disability) and, if appropriate, whether each person or organization was contacted.

Table 6-23 shows the types of contacts that were made for students for whom the contact was reported to be appropriate. The contacts generally were consistent with youths' postschool goals. The state VR agency was contacted most frequently ($p<.001$), both for 12th-grade students and those not assigned to grade levels. Overall, state VR agencies, which could provide a variety of employment and training services and referrals, were contacted for 64% of 12th-graders and 69% of students not assigned to grade levels. Schools

Table 6-23

CONTACTS MADE BY SCHOOL AS PART OF TRANSITION PLANNING FOR 12TH-GRADERS AND STUDENTS NOT ASSIGNED TO GRADE LEVELS

	In 12th Grade	Not Assigned to Grade Level
Percentage of students for whom transition planning involved contacts by the schools to:		
State vocational rehabilitation agency	64.2 (4.5)	69.4 (13.3)
Job placement programs	36.3 (5.5)	41.4 (17.6)
Employers	31.4 (4.3)	39.0 (15.5)
Postsecondary vocational training programs	31.6 (4.4)	--
Other vocational training programs	20.6 (4.7)	12.8 (10.9)
Supported employment programs	19.1 (4.0)	35.6 (15.2)
Sheltered workshops	8.2 (2.9)	32.8 (14.1)
Colleges	30.6 (4.5)	--
Military	16.0 (4.5)	--
Mental health agencies	6.8 (2.7)	12.2 (10.8)
Social service agencies	16.2 (3.8)	42.4 (15.1)
Group homes	4.6 (2.2)	17.5 (12.2)
n	297-452	18-44

Standard errors are in parentheses.
Percentages are reported separately only for categories with at least 25 students.

also contacted job placement programs (36% and 41%), postsecondary vocational training programs (32%), and employers (31% and 39%), consistent with the youths' most prevalent goal of competitive employment. Colleges were contacted for a surprising percentage of students (31%), given the low rate at which students with disabilities enrolled in 2-year or 4-year colleges in the early years after secondary school (Butler-Nalin and Wagner, 1991).

As schools focused their contacts on behalf of youth with disabilities in the area of employment and postsecondary education and training, other types of service needs were less likely to be addressed by the schools. Mental health agencies, social service agencies, and group homes were the least likely to be contacted by schools. Although some of the differences between the frequency of transition contacts for students assigned to grade levels and others were quite large, none were statistically significant.

The pattern of contacts was similar for all disability groups (Table 6-24), with one exception. Schools were less likely to contact state VR agencies on behalf of students with emotional disturbances than any other group (39% vs. 57% to 83%; $p<.05$ to $p<.01$). More often, employers were contacted on behalf of youth with serious emotional disturbances (57%). Employers also were frequently contacted on behalf of youth with mental retardation (46%). Supported employment programs and sheltered workshops were contacted most often for youth with mental retardation (36% and 19%), the category of students that most frequently had supported or sheltered work as a postschool goal. Similarly, colleges were contacted most frequently for students with hearing impairments (44%), students who were most likely to have college as a postschool goal. Contacts to mental health and social service agencies and to group homes were most often made on behalf of youth with mental retardation (18%, 30%, and 11%, respectively). Interestingly, no contacts with mental health agencies were reported on behalf of youth with serious emotional disturbances.

Table 6-24

CONTACTS MADE BY SCHOOL AS PART OF TRANSITION PLANNING FOR 12TH-GRADE STUDENTS, BY SELECTED DISABILITY CATEGORIES

Percentage of students for whom transition planning involved contacts by the schools to:	Learning Disabled	Emotionally Disturbed	Speech Impaired	Mentally Retarded	Hard of Hearing	Other
State vocational rehabilitation agency	57.2 (7.0)	38.8 (12.7)	73.3 (11.4)	82.7 (5.3)	79.2 (8.4)	76.4 (7.3)
Job placement programs	38.1 (8.3)	30.3 (13.5)	36.2 (13.9)	37.2 (10.0)	23.6 (8.7)	28.3 (8.3)
Employers	23.0 (5.8)	56.8 (11.9)	30.7 (12.3)	46.0 (7.0)	26.1 (9.9)	30.6 (8.3)
Postsecondary vocational training programs	33.7 (6.2)	27.1 (10.7)	47.7 (13.1)	24.2 (6.5)	44.9 (10.9)	23.3 (8.0)
Other vocational training programs	15.2 (6.3)	18.0 (11.3)	36.1 (13.4)	37.1 (10.2)	24.6 (9.0)	15.9 (6.7)
Supported employment programs	10.6 (4.8)	18.4 (11.0)	15.6 (10.2)	35.6 (6.9)	10.3 (7.5)	31.7 (8.5)
Sheltered workshops	2.3 (2.5)	6.0 (7.2)	10.2 (8.6)	19.4 (6.0)	0 (<.1)	20.4 (7.6)
Colleges	35.4 (6.5)	31.6 (11.3)	36.5 (12.0)	11.0 (5.0)	44.5 (11.1)	39.5 (9.3)
Military	19.0 (6.8)	27.2 (12.8)	12.4 (9.2)	3.0 (4.3)	7.2 (6.3)	3.1 (3.6)
Mental health agencies	2.4 (2.5)	0 (.0)	8.5 (7.9)	17.6 (5.9)	0 (.0)	10.6 (6.0)
Social service agencies	9.3 (4.6)	10.3 (8.3)	22.0 (11.7)	30.1 (6.8)	19.9 (10.1)	26.6 (8.2)
Group homes	1.7 (2.1)	5.9 (7.0)	0 (.0)	10.8 (4.7)	0 (.0)	8.7 (5.5)
n	64-108	29-44	35-47	36-94	36-68	62-81

Standard errors are in parentheses.

The contacts made to programs and employers in relation to the number of hours students took classes in regular education are shown in Table 6-25. Consistent with the identified goals for students with no regular education classes, schools were significantly more likely to have contacted the state VR agency, as well as supported employment programs and sheltered workshops ($p<.05$). Again, demographics do not appear to have a bearing on the contacts initiated by schools on behalf of students.

Table 6-25

TRANSITION PLANNING CONTACTS MADE BY SCHOOLS FOR 12TH-GRADE STUDENTS, BY HOURS IN REGULAR EDUCATION

	Hours Per Week in Regular Education Classes:				
	0	1-10	11-20	21-30	>30
Percentage of students for whom transition planning involved contacts by the schools to:					
State vocational rehabilitation agency	81.5 (10.8)	73.2 (12.6)	73.9 (7.4)	49.8 (8.2)	43.9 (14.4)
Job placement programs	53.1 (14.2)	63.1 (17.8)	36.1 (11.0)	29.5 (8.9)	25.5 (15.5)
Employers	43.2 (14.0)	34.0 (13.0)	32.7 (8.1)	24.2 (6.6)	44.1 (14.7)
Postsecondary vocational training programs	30.7 (18.2)	27.5 (12.2)	32.7 (8.0)	37.3 (7.3)	21.3 (11.4)
Other vocational training programs	36.3 (15.4)	14.3 (12.5)	23.5 (9.7)	18.8 (7.7)	16.6 (13.4)
Supported employment programs	34.4 (13.7)	26.9 (13.1)	25.2 (8.0)	5.9 (4.1)	15.4 (11.4)
Sheltered workshops	33.9 (13.6)	15.2 (11.3)	5.0 (4.3)	.0 (.0)	3.5 (6.0)
Colleges	25.9 (17.6)	16.9 (10.9)	32.3 (8.4)	35.9 (7.3)	37.0 (13.4)
Military	--	11.0 (13.4)	20.8 (9.3)	19.6 (7.6)	14.5 (12.6)
Mental health agencies	19.3 (11.6)	11.5 (9.5)	4.7 (4.3)	1.9 (2.4)	0 (.0)
Social service agencies	35.4 (13.7)	20.8 (11.9)	18.0 (7.5)	8.3 (4.8)	8.1 (8.3)
Group homes	15.1 (10.2)	8.9 (8.9)	3.6 (3.7)	.3 (1.0)	.0 (.0)
n	19-45	27-68	62-115	106-156	29-49

Standard errors are in parentheses.

Percentages are reported separately only for categories with at least 25 students.

Summary

This chapter has described the pattern of receipt of support services provided by the schools—physical therapy, personal counseling, speech and language therapy, occupational therapy or life skills training, and tutoring, reader, and interpreter services—provided to students with disabilities to help them benefit from their educational experiences. In addition, the provision of transition planning services has been described in detail. We summarize findings regarding the questions listed at the beginning of the chapter:

To what extent did students in regular secondary schools receive any of these support services? Each of these support services? The majority of students with disabilities received some type of support service or services during secondary school. Increasing numbers of students received services as they progressed through the grades. Transition planning was provided most often. The provision of this service increased from only about one-quarter of the students having a transition plan for more than 3 years to nearly 80% of students having a plan by 12th grade. Life skills training was the next most likely service to be provided to students with disabilities. An increase from 25% to 43% was seen for students from 9th through 12th grades.

The other services were not provided to many students. Physical therapy, personal counseling, speech therapy, and reader and interpreter services address the needs of students with disabilities that occur with a low incidence. Fewer than 20% of students with disabilities received any of these services, with one exception. Tutoring (included with reader and interpreter services) increased dramatically, doubling between the 11th and 12th grades. Schools may have provided tutoring for students to help them complete the classes needed for graduation.

Students not assigned to grade levels demonstrated a consistently high receipt of services approached only by 12th-grade students assigned to grade levels. Interestingly, the trend of support services increasing for 12th-grade students continued for students in an extended 12th-grade program, who were the most likely to receive support services.

How did receipt of services vary for students who differed in disability category, gender, ethnic background, and household income? Whereas the provision of transition services did not vary by students' disability category, the provision of the other types of support services did. Students with hearing impairments or multiple handicaps were most likely to receive support services. Speech therapy and interpreter services were provided for students with hearing impairments. Personal counseling, physical therapy, and life skills training were provided to students with multiple handicaps. Students with mental retardation also were very likely to receive life skills training. As would be expected, support services that addressed the needs of a particular disability group were provided more often to that category of student. Students with serious emotional disturbances most often were provided personal counseling, students with orthopedic impairments were provided physical therapy, and students with visual

impairments were provided reader services. Overall, students with learning disabilities, visual impairments, or speech impairments were the least likely to receive support services.

As for demographic variables related to the receipt of support services, only gender was significant. With the exception of transition services, female students were more likely to receive support services than were male students.

To what extent did receipt of support services relate to students' educational placement, i.e., the amount of time they spent in regular education classes? Did support services appear more to augment regular education placements or to be more common for students who spent greater time in special education classes? Students with few or none of their classes in regular education settings, in general, were more likely to receive support services than were students with the majority of their classes in regular education. Students in self-contained special education classrooms received more physical therapy, speech therapy, personal counseling, and life skills training than did students with the majority of their classes in regular education The two exceptions to this pattern were that students with more regular education classes tended to get more tutoring and life skills training in the later grades.

It is likely that the increase in tutoring for students with more classes in regular education reflects the push to help them to complete the requirements for graduation. The increase in life skills training in the later grades may reflect the need for these students to earn sufficient credits for graduation that are not highly demanding academically, or the opportunity to take an elective after many of their academic classes have been completed in previous years. It is likely that such training also is viewed as important for transition to adult life.

It appears that special education support services augmented regular education placements in such areas as reader, interpreter, and tutoring services and life skills training. The receipt of support services also was very common for students with lower functional abilities whether they were not assigned to grade levels or were assigned but spent the majority of their time in special class.

Although in 1990 the majority of students had transition plans, fewer than half the plans were written. The length of time that students' transition plans had been in effect varied with the number of hours they were in regular education classrooms. Students not assigned to grade levels were more likely to have their plans written and for those plans to have been developed earlier. However, this information predates significant changes in federal legislation mandating that all transition plans be written and developed early enough in the student's secondary school career to allow for sufficient planning as well as the involvement of appropriate agencies and individuals. We anticipate significant changes in this area in compliance with the new law.

Transition planning appeared to be conducted by secondary schools unilaterally. For most special education students, nonschool personnel were not involved in developing

transition plans. Among school personnel, special education teachers were the most involved. Students with more classes in regular education were more likely to have regular education teachers involved in their transition planning process. They also were more likely to have school counselors involved—the likely liaison with postsecondary education and training institutions. In contrast, students not assigned to grade levels were more likely to have VR and other community agencies represented on the planning team. This is consistent with these students' goals for supported and sheltered employment, often brokered through VR, and reflected their greater need for support services from social service agencies in order to achieve self-sufficiency. Perhaps similarly, parents, recognizing the greater need for support, tended to be more involved in the planning process with students not assigned to grade levels.

Secondary schools also were not making many contacts with employers, adult service agencies, or postsecondary institutions on behalf of students with disabilities. Fewer than half of students in any disability category for whom such contacts were considered appropriate had such contacts made for them. Despite the lack of involvement of state VR agencies in transition planning, secondary schools did consistently contact them on behalf of students.

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7 WHAT HAVE WE LEARNED ABOUT THE SECONDARY SCHOOL PROGRAMS OF STUDENTS WITH DISABILITIES?

by Mary Wagner

The preceding chapters present detailed information about particular aspects of the secondary school programs of students with disabilities—their academic courses, vocational experiences, and support services. Here, we synthesize these findings, along with information from other NLTS analyses, and consider them from a variety of perspectives. First, we summarize the changing experiences of students as they move from 9th through 12th grades, as well as highlight the differences in their experiences from those of peers in the extended 12th grade and those who were not assigned to grade levels at all. Our second perspective focuses on disability, as we summarize the varied experiences of students with different disability classifications. We then consider patterns of secondary school programs for students who differ in their demographic characteristics—gender and socioeconomoic status. Finally, we consider what NLTS data contribute to the debate on a key issue in special education programming: inclusion of students with disabilities in regular education classes.

Grade-Level Variations in Secondary School Programs

The Early Years

Ninth and 10th grades often are difficult years for students, regardless of whether they have a disability. For most students, these are the years in which they make the transition from middle school or junior high school to high school, with the increasing intellectual and social demands that high school entails. Times of transition and change can be stressful, particularly when combined with the pressures involved in the emerging independence of adolescents.

The school programs of students with disabilities in the 9th and 10th grades as a group were strenuous. In these years, students' schedules were dominated by academic course requirements, leaving room for few electives. In 9th and 10th grades, virtually all students were enrolled in English and mathematics classes, and three-fourths also were enrolled in social studies and science, filling four of the typical six courses in a school day and earning 3 or more of the 5.5 credits earned per year. Vocational education also was prominent in the programs of 9th- and 10th-graders with disabilities. By the end of 10th grade, only 11% of students had not taken any vocational education; on average, students earned 1 vocational credit per year at these grade levels. The majority of students took their academic and vocational courses in regular education settings, averaging 68% of their school day in regular education classes. Training in life skills was not common for secondary school students with

disabilities in the early grades; only about 1 in 4 students received such training in 9th or 10th grade.

Students at these grade levels were marginally less likely than upper-grade students to receive a variety of support services from their schools; about 70% of students with disabilities received from their schools one or more of the support services investigated by the NLTS in their early secondary school years, compared with 81% of seniors receiving support.

With the heavy academic focus, the predominance of regular education placements, and the relatively lower level of support services provided, it is not surprising that 9th and 10th grade students were more likely to receive failing grades in their courses than students in the upper grades. In 9th and 10th grades, 43% and 44% of students received at least one failing grade, compared with 38% of 11th-graders and 23% of 12th-graders. By failing classes, students did not earn the credits needed for graduation and began to fall behind their peers in progress toward graduation. Students were lost to the educational system in the process. Overall, 5% of 9th-graders with disabilities dropped out, as did 7% of 10th-graders. By 11th grade, the cumulative effect of earlier failure was apparent; 10% of students dropped out at that grade level, perhaps recognizing the difficulty of "catching up" on lost credits or ever meeting the requirements of graduation. Another 9% left in 12th grade, most not having the credits needed to graduate with their peers.

The Later Years

By 11th grade, 20%* of students with disabilities were no longer in secondary school. However, if students did persist in school through the challenges of 9th and 10th grades, they encountered greater flexibility in scheduling in their later secondary school years. The rate at which students with disabilities were enrolled in mathematics, science, and social studies, for example, declined markedly at the upper grade levels, although academic courses still comprised about 2.5 of the 5.5 credits earned per year. A reduction in emphasis on academic courses may have reduced the challenges to academic achievement for students with disabilities, but at the same time, these students were not taking the credits often required for further education after high school, perhaps shutting off that avenue for upgrading skills and abilities as young adults.

Vocational courses became more prominent for upper-grade students, with about 8 of 10 students with disabilities in the upper grades being enrolled in occupational vocational education, earning approximately 1.5 credits per year. Life skills training also became somewhat more common for students in the upper grades, with about 4 in 10 students receiving this kind of instruction. Other support services also were provided somewhat more often. For example, about one-third of seniors received help from a tutor, reader, or

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* This figure includes the 12% of students dropped out in 9th and 10th grade and the 8% of students who dropped out earlier (Wagner, 1991a).

interpreter, compared with only about 1 in 6 9th- or 10th-graders. Although the percentage of time students spent in regular education classes did not change over the grade levels, the shift to regular vocational education classes from regular education academic classes may have improved the academic performance of older students; the rate of course failure was markedly lower for seniors than for students at any previous grade level (Wagner, Blackorby, and Hebbeler, 1993).*

Upper-grade students also were more likely than their younger peers to have their schools undertake transition planning on their behalf. About half of 11th- and 12th-graders had transition plans to facilitate their movement from secondary school to adult roles.

Students in the Extended 12th Grade

A small minority of students with disability who had progressed through the grade levels of secondary school continued in school past a single 12th grade year, in many cases despite have earned the credits required to graduate. This extended 12th-grade year continued the high level of involvement in vocational education that was noted for 12th-graders; about three-fourths of students were enrolled in occupational vocational education and a similar percentage were enrolled in prevocational courses, earning a total of 2.8 vocational credits that year. Academics, too, were part of the extended 12th-grade curriculum, although students were enrolled in academic classes less intensively, earning 1.6 credits in the extended 12th grade, compared with 2.2 academic credits in the typical 12th-grade year. Support services were a dominant feature of the extended 12th grade; all students received at least one of the support services investigated by the NLTS. Almost 8 of 10 students received life skills training and 70% received personal counseling or therapy, more than at any other grade level. Perhaps these more intensive services available in an extended year were the incentive to remain in school longer, or they were the services felt to be needed for students to accumulate the credits they needed to graduate or to make a successful transition out of school.

Students Not Assigned to Grade Levels

Overall, 5% of students with disabilities who attended regular secondary schools were not assigned to grade levels, but were in ungraded special education programs. Compared with students at grade levels, these students were disproportionately classified as multiply handicapped or mentally retarded or had other disabilities usually considered more severe. The school programs of students not assigned to grade levels were significantly less likely to involve academic instruction than the programs of other students, although two-thirds did receive academic instruction, largely in special education classes. Students not at grade levels also were much less likely than their peers to be receiving occupational vocational education (45% vs. 58% to 83% of students at grade levels), raising questions regarding how well

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* Readers should be reminded that failing students were those most likely to have dropped out of school, leaving a population of academically more capable students in the upper grades.

prepared these students could be to enter the workforce after secondary school. In contrast, students not at grade levels were more likely than others to be receiving instruction in prevocational or job readiness skills (35% vs. 18% to 22% of students at grade levels). Support services also were common for students not assigned to grade levels; 84% received some support service, including 61% who received life skills training. Transition planning also was a feature of the programs of these students; 87% had transition plans, with those plans being more likely to be written and to have begun sooner than plans of students in 12th grade.

Differences in School Programs for Students in Different Disability Categories

Regardless of the topic area addressed by the NLTS, marked differences in experiences are apparent for youth with different kinds and levels of disability. In the arena of secondary school programs, differences in program decisions are intended by law to reflect the nature and severity of disability, so the variations we see in this report are expected. In this section, we summarize NLTS findings for students in different primary disability categories, as assigned to them by their schools or districts in 1985.

Students with Learning Disabilities

Students with learning disabilities constituted 57% of secondary school students with disabilities (Marder and Cox, 1991), the largest single disability category at the secondary school level. By sheer numbers alone, their experiences were the dominant experiences of secondary school students with disabilities.

Virtually all secondary-school-age students with learning disabilities attended regular secondary schools and had programs that proceeded from grade level to grade level, as did typical students without identified disabilities. If they continued in secondary school until graduation, they completed school in just over 8 semesters and earned 22 credits, also similar to typical students. They were less likely than many other categories of students with disabilities to supplement their school-year programs with summer school or extra semesters of study.

A key aspect of the programs of secondary school students with learning disabilities was their vocational emphasis. Students classified as learning disabled earned more credits in vocational courses than any students except those classified as mentally retarded, with the majority of credits being in occupationally specific courses (4.6 of 5.1 vocational credits). They also were more likely than any other group of students to have had concentrated instruction in a vocational content area (40% had 4 or more semesters), with the majority of students concentrating in courses in trade and industry, reflecting in part the predominance of males in this disability category (Marder and Cox, 1991). One in 8 students with learning disabilities had participated in work experience programs as part of their vocational education. Many more students had other work experiences, however; 63% had jobs during high school, either work-study or paid competitive jobs, more than students in many other categories (e.g., 46% of students with speech impairments; D'Amico, 1991).

The emphasis on vocational rather than academic courses reflects the transition goals of students with learning disabilities, which emphasized competitive employment (59%) over college (28%). It also reflects the reality of their postschool paths. Few students with learning disabilities (18%) had attended 2-year or 4-year colleges when they had been out of high school 3 to 5 years (Marder, 1992). The majority had competitive jobs (57%), and they were more successful than most groups of students with disabilities in keeping jobs after high school and in achieving wage gains over time (D'Amico and Blackorby, 1992). Students with learning disabilities, as a group, illustrate the tailoring of secondary school programs to postschool paths.

Yet, we cannot dismiss concerns about the academic side of their programs. Students with learning disabilities earned almost 12 of their 22 credits in academic courses. However, the level of classes taken by students with learning disabilities rarely was college preparatory. Only 11% of students with learning disabilities had taken advanced mathematics and 17% took foreign language. The rarity of enrollment in college preparatory classes reflects the functional levels of the majority of students in their category, whose average IQ was 89; only 8% had tested IQs of more than 105 (Marder and Cox, 1991).

On average, students with learning disabilities spent three-fourths of their class time in regular education classes, in which 95% of them were expected to keep up; fewer students actually did so (87%). Few students classified as learning disabled received tutoring services from their schools, particularly in the early high school years. Between 15% and 20% of 9th- through 11th-graders received tutoring assistance; 36% of 12th-graders receiving tutoring help. Regular education placements, particularly without support, were difficult for students academically. More than a third of students with learning disabilities had failed at least one course in their most recent school year, with the failure rate being much higher in regular than in special education classes (33% vs. 12%; Wagner, 1991a). Losing credits through failing courses made completing school much more difficult. The dropout rate for students with learning disabilities was among the highest of any students with disabilities (30% of students with learning disabilities left school by dropping out). Once they dropped out, very few returned to school or completed their secondary educations by earning a GED (Marder, 1992).

The academic difficulties of students with learning disabilities while they were in secondary school may be part of the explanation for their avoidance of postsecondary education. However, their reluctance to further their educations after secondary school is worrisome. Although they were relatively successful in obtaining jobs, without continued upgrading of skills, their ability to achieve financial independence in the long term may be limited. Students in the general population will bring to the marketplace skills earned through a much higher enrollment rate in postsecondary schools (68% of youth in the general population 3 to 5 years after high school, compared with 30% of youth with learning disabilities). Competing for jobs after high school is likely to become increasingly difficult for these students, despite their vocational training in secondary school.

Students with Speech Impairments

Earlier NLTS analyses showed that young people with speech impairments were among the "success stories" when looking at postschool outcomes (Wagner, 1992d, p. 8-1). They experienced greater gains in competitive employment in the early years after secondary school than youth in any other disability category, so that 3 to 5 years after high school 65% were competitively employed. They also experienced the greatest increase in the percentage of employed youth who earned more than $6.00 per hour (D'Amico and Blackorby, 1992). Their dropout rate was no higher than that of students in the general population (about 25% of exiters), and almost half had attended some kind of postsecondary school when they had been out of secondary school 3 to 5 years.

The similarities between youth with speech impairments and youth in the general population began in secondary school. Students with speech impairments had secondary school programs that most closely mirrored those of typical regular education students. They were significantly more likely than other students with disabilities to be declassified from special education in secondary school; 19% of students with speech impairments had been declassified in a single year (Wagner, 1991c), belying the notion that special education is a one-way street—once in, never out. Hence, students with speech impairments were more likely than any other category of student to be fully included in regular education classes. Almost two-thirds of students classified in 1985 as speech impaired spent all of their class time in regular education classrooms in grades 9 through 12. Consequently, students with speech impairments earned 11 credits in regular education academic classes, those most likely to qualify toward postsecondary education requirements.

The postsecondary educational aspirations of students with speech impairments were clearly articulated by parents; parents of 45% of these students believed that their child "definitely" or "probably" would graduate from a 4-year college (Valdés, Williamson, and Wagner, 1990). Among 12th-graders, 36% of students with speech impairments who had transition plans had college enrollment as a transition goal; 39% of students in this category who had been out of secondary school 3 to 5 years reported having done so. In preparation for postsecondary education, students with speech impairments were significantly more likely to have taken advanced mathematics (36% vs. 11%) and foreign language (44% vs. 17%) than students with many other kinds of disabilities. These course-taking choices and other secondary school experiences laid a solid groundwork for a successful transition out of school.

Students with Emotional Disturbances

When the NLTS first analyzed the secondary school programs and performance of students with disabilities, the circumstances of students classified as seriously emotionally disturbed stood out. "Youth classified as having serious emotional disturbances demonstrated a pattern of disconnectedness from school" (Wagner, 1991b, p. 11-3), including high absenteeism, low rates of memberships in school groups, and strong affiliations with friends outside of school

(Wagner, 1991c; Newman, 1991). Their school performance was poor. They had the lowest grade point average and the highest rates of course failure and grade retention of any category of students. As shown in Chapter 3, their dropout rate was the highest of any group of students with disabilities; 50% of students in this category who had been enrolled in grades 9 through 12 left school by dropping out. These findings led us to ask then, "What was it about the match, or mismatch, between the needs and characteristics of these youth and the expectations and programs of the schools that made for such pronounced disconnectedness from school, academic failure, and dropout behavior?" (Wagner, 1991b; p. 11-4).

Some clues to a partial answer to this question are contained in the findings reported here. The majority of students who had been classified as seriously emotionally disturbed attended regular high schools (88%), where their programs were largely similar to those of students without identified disabilities. Virtually all were assigned to grade-level programs. On average, they spent three-fourths of their class time in regular education classes, and almost one-third of students with emotional disturbances were fully mainstreamed. Their programs were less likely than those of students with learning disabilities, for example, to emphasize vocational education. Regular education academic teachers of 12th-graders in this category reported that all were expected to keep up with other students. Teachers of 70% of 12th-graders with serious emotional disturbances reported that these students needed some accommodations to succeed in regular education, but the accommodations provided were almost entirely academic in orientation.

Yet the disability for which these students were classified as needing special education was emotional in nature, and their difficulties in school were as much social as academic, as suggested above. One in 5 students had been arrested at some time while they were in school (Newman, 1991). However, despite the emotional nature of their disabilities, fewer than one-third had been provided personal counseling or therapy by their schools to help in coping with their disability. Only 11% of 12th-graders were reported to have behavior modification programs in place in their regular education classes. Can we expect that more time to take tests or modified grading standards will effectively help a student whose disability may manifest itself most in conduct disorders or social adjustment problems? NLTS data suggest few aspects of students' school programs that are directed explicitly to the central nature of their disability.

The social adjustment problems of young people with serious emotional disturbances were compounded after leaving school. They were among the least likely youth to belong to community groups or to be registered to vote after high school; by 3 to 5 years after leaving school, 56% had been arrested at least once (Wagner, 1992a). The individual and societal costs of their poor social integration are high, making the need to find better treatment models for these students while they are still in school.

Students with Mental Retardation or Multiple Impairments

Students classified as having mental retardation or multiple impairments have school programs that are similar to each other in many ways and that differ markedly from those of most other students with disabilities. The similarities in programs for these two groups of students are not surprising in that more than half of students classified as multiply handicapped have mental retardation as one of their disabilities (Marder and Cox, 1991). Hence, they often have educational needs similar to those of students with mental retardation alone, with the added requirements imposed by their other disability or disabilities.

Among students with mental retardation, 83% attended regular secondary schools; fewer students with multiple impairments did so (59%). They were the least likely students in regular schools to be assigned to grade-level programs (87% and 67% for students with mental retardation and multiple impairments, respectively). Students with mental retardation or multiple impairments were the least likely to approximate year-round learning programs by attending summer school (9% of both groups). They were more likely than any other students in regular schools to leave school by reaching the maximum age limit for attendance (5% and 14%).

In the academic realm, students with mental retardation or multiple impairments who completed 4 years of secondary school and received credits earned about as many credits as students with disabilities as a whole, showing a typical degree of emphasis on academic instruction for students with disabilities (i.e., 11 academic credits earned). However, fewer than 3 credits were earned in regular education academic classes. In fact, students in these two categories spent the smallest proportion of their class time in regular education, 44% and 32%, respectively. However, relatively few students were in completely segregated settings within regular schools; 8% of students with mental retardation and 24% of students with multiple handicaps spent no class time in regular education settings. Within their regular education academic classes, students with mental retardation were less likely than others with disabilities to be expected to keep up with other students (68% vs. 92% of students as a whole). Yet they were the only category of students to exceed expectations; a higher percentage were reported by teachers to have kept up in class than were expected to do so (79%).

The placement of students with mental retardation or multiple impairments in the vocational realm also differed from those of other students with disabilities. Although virtually all had been enrolled in occupational vocational courses and they were more likely than many other categories of students to be enrolled in prevocational education courses, students with mental retardation or multiple handicaps again were much more likely to participate in special education occupational courses than were other students with disabilities (44% of those with mental retardation and 62% of those with multiple impairments took special education occupational training, compared with 21% of students with disabilities as a whole).

The programs of students with mental retardation or multiple impairments were more likely than those of students with many other kinds of disabilities to include life skills training, reflecting the emphasis in their transition goals of achieving maximum personal independence (50% of such students with transition plans had this goal). In 12th grade, for example, 52% of students with mental retardation and 59% of those with multiple impairments received life skills training, a significantly higher rate than the 43% of students with disabilities overall.

In their early postschool years, many students with mental retardation did achieve independence in some arenas. As a group, they were as socially active as any other group of young people with disabilities, and they achieved significant gains over time in their employment status and in the rate at which they lived independently. Yet even substantial gains left youth with mental retardation well behind those with learning or speech impairments, for example. Young people with multiple impairments were left even farther behind. They were "the exception to the rule of increasing independence" after high school for young people with disabilities (Wagner, 1992d; p. 8-3). There were no marked increases in employment or residential independence, coupled with low levels of postsecondary school enrollment and relatively high rates of social isolation compared with other categories of youth. However, young people with multiple impairments were more likely than other youth to participate in supported or sheltered employment programs and to be living in group homes, which provide support services to participants that may help them maximize their postschool independence.

Students with Visual Impairments

Students with visual impairments had a stronger academic focus to their experiences than any other group of students with disabilities, a focus that may have had its roots in parental expectations. Parents of youth with visual impairments were more likely than parents of other youth with disabilities to expect their children to graduate from a 4-year college or university (53% vs. 26%; Valdés, Williamson, and Wagner, 1990). The secondary school programs of students with visual impairments reflected their college preparatory emphasis. They earned more academic credits than any other group of youth (14.7 vs. 11.9 overall) and were significantly more likely than other students to enroll in college preparatory classes, including advanced math (57% enrolled vs. 11% of students with disabilities as a whole) and foreign language (62% vs. 17%). They also were more likely than most students to supplement their school-year programs by taking summer school (31% vs. 16% overall). Although they earned fewer vocational credits than most other students with disabilities, when they did enroll in occupational courses, they were more likely than others to take courses in technical fields. They had the highest grade point average of any group of students (Wagner, 1991a) and among the lowest dropout rates.

With this positive academic base, many young people with visual impairments went on to pursue their college aspirations. Youth with visual impairments were more likely than any other category of youth to go to 2-year or 4-year colleges after high school; 61% did so, a rate virtually the same as that of youth in the general population (Marder, 1992). They also were

most likely to be full-time students in postsecondary schools and to have an academic focus to their programs, rather than a vocational one. Although they did not experience early success in the job market (D'Amico and Blackorby, 1992), the solid academic groundwork of their secondary school programs and the long-term benefits of postsecondary education suggest more promising outcomes for these young people than for many with disabilities.

Students with Hearing Impairments

Students with hearing impairments often are considered as a single group as evidenced by the fact that several states use a single disability category for students with hearing impairments, rather than distinguishing students who are hard of hearing from those who are deaf, as the federal government does. However, the NLTS demonstrates that students classified as hard of hearing and those classified as deaf have markedly different secondary school programs to reflect their varying levels of hearing disability.

A basic difference in their school experiences is the extent to which students attended regular secondary schools. Among students classified as hard of hearing, 91% attended regular secondary schools, but only 37% of students classified as deaf did so, the lowest enrollment rate in regular secondary schools of any category of students with disabilities. Hence, when we examine the programs of students in regular secondary schools, we are describing the programs of only a minority of deaf secondary school students, but the vast majority of programs of students classified as hard of hearing.

Within regular secondary schools, the programs of hard of hearing and deaf students had both similarities and differences. Most students in both categories were assigned to grade-level programs, completed school in just over 8 semesters, and earned 13.5 academic credits out of 22 total credits. Virtually all students in both categories had enrolled in occupational vocational courses and earned 3.7 credits in those courses.

However, their programs differed significantly in the extent to which they experienced their programs in regular education vs. special education settings. Students who were hard of hearing spent considerably more of their time in regular education classes (75%) than students classified as deaf (57%). Whereas a third of hard of hearing students spent all of their class time in regular education classes, only 10% of deaf students were fully included. Deaf students also were more likely to receive a variety of support services from their schools than were students classified as hard of hearing. In 9th grade, for example, 80% of hard of hearing students received support services from their schools, compared with 96% of students who were deaf. Speech/language therapy and help from an interpreter were commonly provided to hearing impaired students, but those who were deaf were more likely to receive these forms of assistance than students who were hard of hearing (e.g. 81% vs. 61%). Hard of hearing and deaf students were about equally likely to leave school by dropping out (16% and 11%), but deaf students left school with significantly more credits than hard of hearing students (13 vs. 10).

The school experiences of those with hearing impairments also differed in important ways from those of students with other forms of disability. Their goals after high school were more likely than other students' to include college attendance (43% vs. 23%), and they were more likely than most categories of students to graduate from high school as a first step toward their goal of postsecondary education, more than 80% did so. Three to 5 years after leaving secondary school, 60% of students with hearing impairments had attended postsecondary school, a rate approaching that for students in the general population (Marder, 1992). Their transition planning also was more likely than many other students' to involve contacts with or participation by staff from the vocational rehabilitation agency, a common adult service provider for students with hearing impairments and an agency that frequently supports postsecondary school attendance for its clients (Wine, Hayward and Wagner, 1993).

Students with Physical Impairments

Students with physical disabilities, including orthopedic or other health impairments, span a broad range of functional abilities that have quite different implications for educational programs. Some students may require little more than adaptive physical education, with no particular demands for accommodation placed on other classroom teachers. Others have disabilities that may limit functioning drastically, require complex equipment for support, and pervade all aspects of their school experiences.

Given this diversity, it is not surprising that there is no particular "central tendency" to the secondary school programs of students classified as orthopedically or other health impaired. As a group, we rarely find them to have been at either extreme of the distribution along any dimension of programs we have examined, but rather the mixture of programs combined within these groups places them generally in the middle range of regular education placement, credits earned, and other aspects of programs we have investigated. The majority attended regular secondary schools and they spent about 70% of class time in regular classrooms. Their programs were a fairly typical mix of academic and vocational courses. One exception to the middle ground of their programs is that students with health impairments were more likely to take summer school than any other students, perhaps to compensate for their high absenteeism due to illness or treatment. Not surprisingly, students with physical impairments also were were more likely to receive physical therapy, mobility training, or general help with physical needs than were students in most other disability categories.

In their postschool years, we also find youth with physical disabilities to be in the midrange of the distribution of those with disabilities, neither being as independent as youth with learning disabilities, for example, nor demonstrating the generally poor outcomes of those with multiple handicaps. Youth with orthopedic impairments were less likely than youth with other health impairments to be employed after high school (22% of those out of school 3 to 5 years, compared with 40% of youth with other health impairments; D'Amico and Blackorby, 1992), but youth with other health impairments were the most likely still to be living with their family of

origin rather than independently (72% living with parents vs. 58% of those with orthopedic impairments, and 55% overall; Newman, 1992).

Gender Differences in School Programs

In the academic arena, common gender differences that are observed in the general population of students, such as the tendency for female students to take somewhat less math and science than male peers (Blank and Dalkilis, 1991), are not apparent among students with disabilities. Perhaps this difference results from the more basic levels of mathematics and science studied by many students with disabilities; few students with disabilities of either gender took electives in mathematics and science. The only significant difference in academic course-taking between males and females is the higher rate of foreign language enrollment among females. Male and female students also had similar academic experiences with regard to the settings of their classes; both earned about 7 credits over 4 years in regular education academic classes.

However, sizable and traditional gender differences are noted in vocational course-taking. Although males and females were about equally likely to have taken vocational courses at some point in secondary school, the time and nature of courses differed. Female students were not as likely as males to enroll in vocational courses early in their high school careers. Thus, females, who dropped out of secondary school in 9th or 10th grade, for example, were less likely than males to have had vocational training before leaving school.

Female students also did not take as many vocational courses when they did enroll in them. In the 4 years of secondary school, male students earned, on average, a full credit more in occupationally oriented vocational classes (4.8 credits vs. 3.7). This is mirrored in the percentages of students who concentrated in particular vocational areas (took 4 or more semesters in a single content area); 40% of males were vocational concentrators by the end of 12th grade, compared with 23% of females. The content areas of vocational instruction also differed, with females emphasizing the traditional areas of home economics and office occupations and males concentrating in trade and industry. Not so traditionally, women were three times as likely as men to enroll in technical vocational courses.

Perhaps reflecting the relatively greater severity of disability among females than males (Wagner, 1992), female students were more likely than male peers to receive one or more of a variety of support services investigated by the NLTS. Among students assigned to grade levels, 63% to 75% of males received support services from 10th to 12th grades, compared with 87% to 92% of females. The greatest disparity was in the extent to which females received life skills training (including home economics classes), although females also received counseling and help from a tutor, reader, or interpreter in some grade levels at a higher rate than male students.

The emphasis on home economics and life skills instruction among young women may be an artifact of tradition, or may reflect their postschool goals. Female 12th-graders with disabilities were much less likely than males to have competitive employment as their postschool goal, a pattern that reflects in their postschool paths. Despite higher academic performance while in school, young women with disabilities were just as likely as young men to drop out of school, and almost 25% did so because of pregnancy or childrearing. By 3 to 5 years after high school, 30% of young women with disabilities were married and 41% were mothers, a rate that was significantly higher than the reported parenting rate for young men with disabilities (16%) or for young women of the same age in the general population (26%).

> The frequency with which young women with disabilities were mothers in their early years after leaving school—particularly single mothers—is cause for concern. Why were they more likely than other young women to be mothers at such an early age? If they were pregnant by choice, why were other options, such as further schooling or employment, not seen as more attractive or within reach? (Wagner 1992b, p. 36)

Although the findings reported here do not answer these questions, we do show that the school programs chosen by or provided to many young women with disabilities support a postschool path involving home and child care more actively than postsecondary education or employment.

The Haves and Have Nots

Students with disabilities who came from families with poverty-level incomes have markedly different educational programs than did students whose families had higher incomes, perhaps reflecting the reality that resource-poor students often attend resource-poor schools. A similar pattern is apparent when white youth are compared with minority students with disabilities. Academically, students with disabilities from households with annual incomes of $12,000 or less who completed school earned fewer academic credits in 4 years than did students from households with incomes of $25,000 or more. They also were less likely to have enrolled in courses, such as advanced mathematics, that are considered part of the path to postsecondary education. Perhaps these course-taking choices reflect the greater feasibility of college attendance on the part of students from families that could better afford postsecondary education. However, they do not reflect a higher level of aspiration for college enrollment; the rate at which parents of young people with disabilities expected their children to graduate from college did not differ at all between parents from households of different income levels (Valdés, Williamson, and Wagner, 1990).

What also is unlikely to reflect personal choice is the finding that poorer students and minorities were less likely than more affluent and students and whites to be enrolled in regular education classes. For example, in 9th grade, 63% of students from households earning less than $12,000 per year were in regular education academic classes, compared with 76% of those from households earning $12,000 to $25,000 and 84% of those from families earning

more than $25,000 per year. This finding raises the important question of the role of poverty in aggravating the educational deficits and making more compelling the educational needs of young people with disabilities. It is apparent that students with disabilities who lived in poverty were more likely to need the academic support services of special education classes than their more affluent peers. Given the higher cost of educating special education than regular education students (Moore et al.,1988) , it is also apparent that an abundance of poor students needing special education placements can place a financial strain on poor schools. Yet the regular education classes in those poor schools may be particularly inhospitable environments for students with disabilities because of the other challenges posed to teaching staff by high concentrations of students with limited English proficiency, troubled family lives, and economic disadvantage, regardless of disability. In economically strapped schools, special education classrooms may be one of the few options available for addressing the dual needs of students with disabilities who live in poverty.

Yet, students in poverty are less likely to be receiving support services than other students with disabilities. For example, over 4 years in secondary school, 70% of students from families earning less than $12,000 per year reported receiving support services from their schools, compared with 91% of students from households earning $25,000 or more per year. So students of poverty may be spending more time in special education, yet the support services often considered part of special education are less likely to be provided to them. Poor students with disabilities apparently experienced the social costs of special education placements, without the benefit of support services that generally accrue to students spending more time in special education classes, such as tutoring, counseling, or life skills training.

Less access to support services for young people with disabilities from poor families continued into their postschool years. Other NLTS work has shown that applications for services from state vocational rehabilitation agencies, for example, were more common for youth from higher-income households; they also were more likely to receive services once they applied than were applicants from lower-income households (Wagner and Cox, 1991).

Postschool outcomes, too, showed the disadvantages of poverty. Lower employment rates, lower levels of social integration (registration to vote, group memberships), and higher arrest rates characterized the postschool experiences of youth from low-income households relative to other youth with disabilities (Wagner, 1992d). Clearly, disability is only one of the obstacles to independence faced by youth with disabilities from poor households.

A Cross-Cutting Issue: Inclusion in Regular Education Classrooms

At the secondary school level in the late 1980s, inclusion in regular education was a reality for the majority of students. Overall, 92% of secondary-age students with disabilities attended regular secondary schools with students who had no identified disabilities. Within those schools, only 3% of students with disabilities spent all of their time in special education classes; 21% of students with disabilities were fully included in regular education classes for all

of their coursework. As a group, students with disabilities spent 70% of their time in regular education classes, with the remaining 30% of classroom time spent in special education settings. Clearly, for most students, inclusion is not an either/or choice, but a matter of degree. The question is not whether students are included or should be included in regular education, but for what they are included, who is included, and what experiences they have when they are included in regular education. Do they have the kinds of educational experiences in regular education classrooms that will help them to learn and to succeed?

Over their secondary school careers, 88% of students with disabilities spent time in regular education classes for academic subjects; about 70% of students did so at any given grade level. Virtually all vocational students with disabilities (93%) took their vocational education classes along with students who had no disabilities. However, the degree to which students with disabilities were included in regular education varied widely for students with different disability classifications.

An evaluation of whether their levels of inclusion were "appropriate" as the law requires for students with disabilities, must be shaped by an understanding of what regular education experiences were like. When students with disabilities were mainstreamed into regular education classes in secondary school, they shared the attention of a single teacher with, on average, 22 other students; 2 others also had disabilities. In contrast, their special education classes contained 9 students, a teacher, and a part-time aide. Nine of 10 students with disabilities in regular education classes were expected to keep up in those classes; fewer students actually did so. Students received a variety of accommodations to help them succeed, with allowances in test-taking procedures, behavior management programs, and greater one-to-one instruction being most common. Regular education teachers, too, were given support when they had students with disabilities in their classes. Consultation with special education teachers was the most common form of support.

Despite these accommodations and supports for teachers and students, regular education is a difficult environment in which to succeed. Other NLTS analyses (Wagner, 1991a; Wagner, Blackorby, and Hebbeler, 1993) have demonstrated that, controlling for differences in students and other aspects of their programs, students with disabilities who spent more time in regular education classes were more likely to fail courses than other students, and that failing courses is a powerful predictor of early school leaving. The debate on the value of inclusion must not sacrifice students with disabilities to principle; regular education classrooms are not always hospitable for students, whether or not they have disabilities. Continuing NLTS analyses are focused on identifying factors that will help students succeed in those classrooms—the necessary prerequisite to placement there.

This chapter has summarized the findings of the report in the context of other information produced by the NLTS. In addition for providing the most complete description of secondary school programs of students with disabilities that has been available to date, this volume also lays the groundwork for future NLTS work. Specifically, we now turn our attention to relating

the variations in school programs described here to aspects of students' performance while they were in secondary school. Examining secondary school programs through the lens of student outcomes will further expand our understanding of students' experiences in secondary schools.

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